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ABSTRACT

The four reports in this volume cover several phases of a project to determine English language education needs of foreign doctors and medical staff working in hospitals in the United Kingdom. Each paper deals with a set of data the consideration of which may be applied to curriculum development in English for special purposes for medical practitioners. Topics covered include: (1) assessment of priorities in the development of staff-patient communication skills in a variety of clinical contexts; (2) research into the demands made on staff communicative ability in real medical situations; (3) "Doctor Speech Functions in Casualty Consultations: Some Quantified Characteristics of Discourse in a Regulated Setting"; and (4) "Doctors in Casualty: Applying Components of Communicative Competence to Specialist Course Design." (JB)

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DOCTOR-PATIENT COMMUNICATION SKILLS

WORKING PAPERS

1-4

and APPENDICES

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WORK IN PROGRESS, REPORT 1 (April 1974)

I INTRODUCTION

This short report follows our preliminary working paper Proposals for Course Preparation and Programme (March 1974), in which an approach was outlined towards the production of English language learning materials for overseas doctors on the basis of a functional analysis of language activities and demands. Some provisional findings are set out below, with the intention that they should be available for comment and feed-back from the medical/clinical staff at whose suggestion we are undertaking the study.

II PLAN OF STUDY ADOPTED

We have broadly adopted the plan of study put forward in our Proposals for Course Preparation and Programme: Plan of Study (pp.2-3)

After preliminary informal discussions with both native-speaking and non-native-speaking staff on the two topics of general weaknesses in foreign doctors' communication skills and the particular hospital departments where such weaknesses might be most critically felt, we collected relevant background information about the hospitals in the Lancaster-Morcaszbe group. After visits to EMT (Beaumont), geriatric (Moor), psychiatric (Ridge Lea) and Casualty (RLI), we decided to concentrate our efforts on the consultation situation in Casualty, supported for contrastive and corroborative purposes by visits to EMT units. A number of reasons led to the decision:

1. Recently arrived foreign doctors often work in Casualty before going on to a specialty - it is therefore in many cases their first experience (outside the preliminary period of assessment under a Consultant) of practice in U.K.
2. language communication in the casualty consultation seemed to demand a higher degree of immediate accuracy and 'first-time' comprehension than, for example, might be the case with a ward round: the doctor in Casualty often sees a patient only once, and has to rely entirely on information obtained from the patient during the interview. In more serious cases, where he has to piece together information from relatives and ambulancemen, the communication activity becomes much more complex. It would seem that in wards and clinics, by contrast, opportunities for corroborative follow-up investigation lessens the requirement of immediate successful communication.
3. A corollary to (2) is the need for a degree of speed in attending to the simpler casualty cases - when the doctor, faced with a queue of patients, has to elicit all details relevant for his diagnosis and treatment in as short a time as possible. Clearly, too, when an incoming patient's condition is critical, speed in accurate communication will be at a premium.
4. Since a proportion of Casualty patients are referred to other departments, the casualty officer is often called upon to make contact and arrangements with a wider variety of both medical and non-medical personnel than might be the case in, say, the EMT clinic. This referral and contact function (often at a distance, in writing and over the telephone) entails a practical command of a broader range of language skills (see Proposals for Course Preparation and Programme, p.2, Language Skills)

The Casualty Officer, then, has to be able to communicate with many different people, under conditions of some stress, and via a variety of channels.

In this Pilot Study, therefore, the Casualty Department at RLI appeared the most suitable location, supported by the potential contrast of visits to the INT units.

III DATA COLLECTION

A provisional methodology followed informal observation of a number of doctors in interaction with patients, nursing staff and others in the course of their duty. We further solicited informally the views of the doctors themselves and those with whom they come into contact. (These observations and informal discussions underlined our original supposition that a major role in effective communication was played by subjective attitudinal factors. Socio-psychological measurement scales exist, and an important corollary to our study would be to investigate these factors more fully).

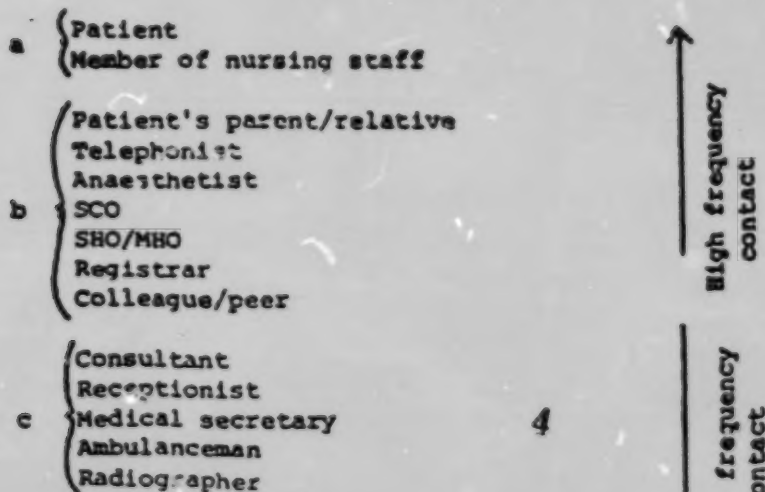
Preliminary observations outlined the need for

1. a list of the C.O.'s possible interlocutors, grouped roughly at this stage according to relative time spent in communication with each.
2. flow charts to characterize, respectively, the throughput of different categories of patients, and the various doctor task sequences related to them.
3. a taxonomy of language skills with a provisional flow-charting of typical language skill sequences.
4. an observational check-list of language functions to serve, with revision and refinement, as the basis of a means of recording language function sequences.
5. some recording (audio and video) of live casualty consultations for
 - a) confirmation and further refinement of our language functions record before we could proceed to the production of sample learning materials;
 - b) use in the eventual preparation of simulated consultations.

IV PRELIMINARY FINDINGS

1. C.O.'s Interlocutors

The following version of III.1 above was arrived at after observation and informal interrogation:



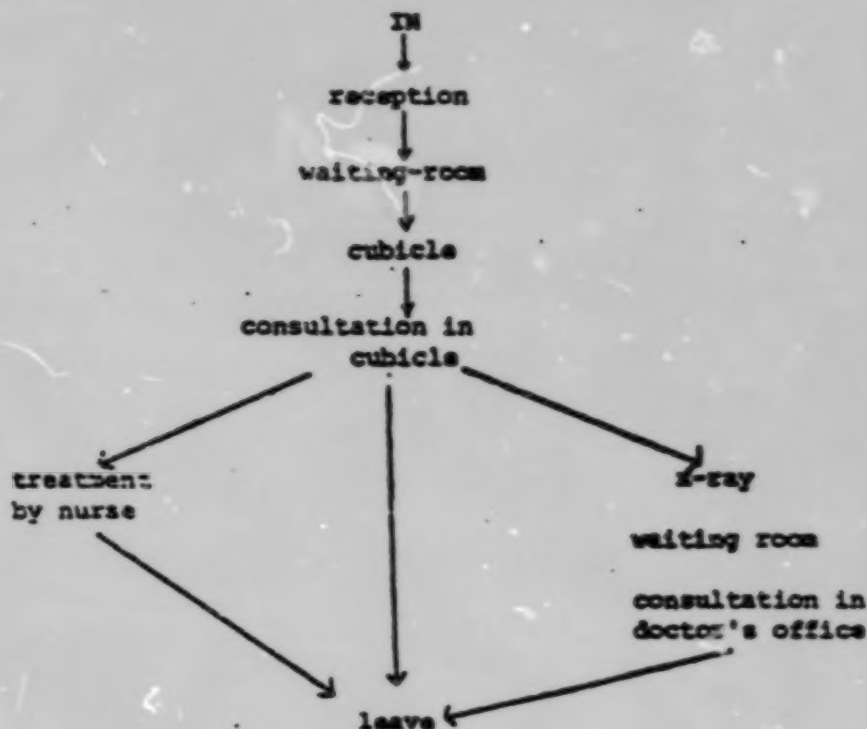
- GP
 Patient's friend/witness
 Policeman
 Coroner
 Pathologist
 Other medical unit (hospital poison centre, etc.)
 Medical student

↓
 Low frequency
 contact

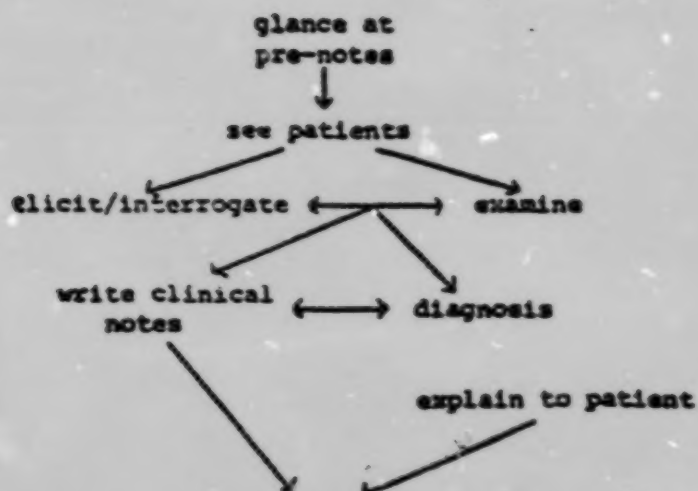
We would expect to have to revise the content and ordering of this list after feedback from experienced staff.

2. Flow Charts (see III.2 above)

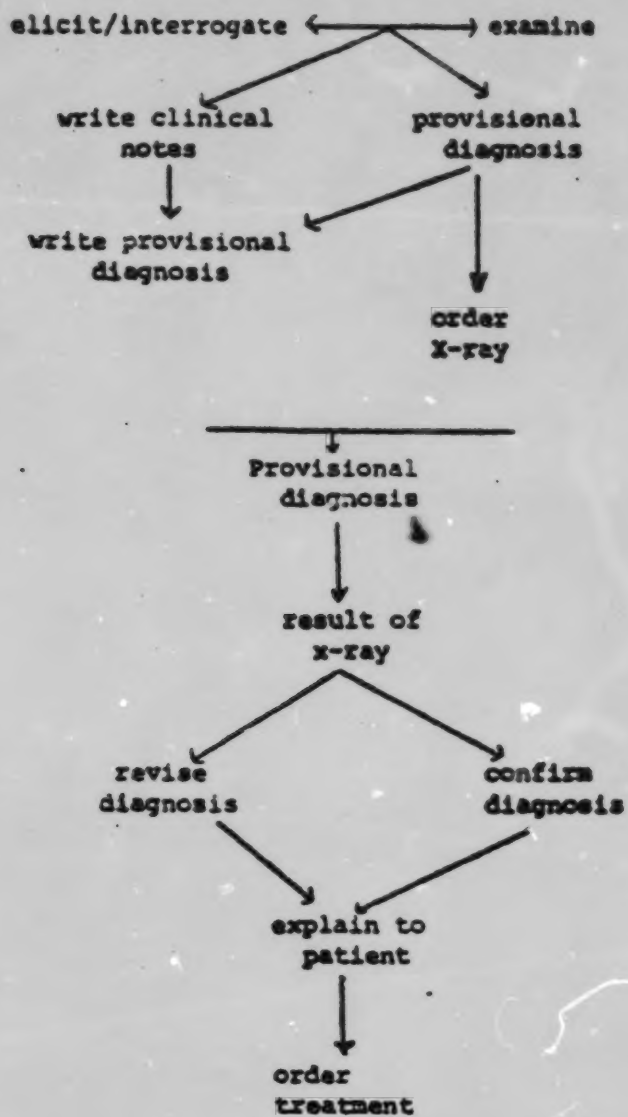
1. Patient (non-stretcher)



2. Doctor (simple case)



(with x-ray)



Listening A first distinction could be made between listening to live speech and listening to telephone speech.

- a) Telephone speech: this may suffer from varying degrees of distortion and be to a greater or lesser extent contextualized. Thus the skill of understanding the anaesthetist's replies over the internal telephone network should be relatively easier to master than the ability to handle an incoming call of a largely unpredictable nature from a G.P.
- b) Live speech i) with eye contact. When the doctor can see his patient's facial expression, he is able to - and usually needs to - register meanings expressed both verbally and non-verbally. If the patient's expression and gestures reinforce the verbal message, the processing load is reduced, but the doctor must also be sensitive to contradictions between the verbal and non-verbal messages. For example, with an anxious patient, his facial expression may betray his explicit reply.

ii) without eye contact. There is some obvious similarity between this and telephone listening (see above), although here the context is more apparent. Since there is only a verbal message the part played by such factors as intonation and word stress, speech hesitations etc is greater.

Speaking: What the doctor has to be capable of in a receptive mode in listening skills relates to his productive speaking capabilities. There is a need for greater explicitness coupled, in principle, with increased 'redundancy' in situations where the doctor cannot rely on facial expressions to carry part of the message. In speaking over the telephone it is often necessary to use, quite consciously, an 'over-correcting' style of speech to compensate for distortion and noise in the channel.

Reading: The sub-skills here are broadly divisible between the reading of published materials such as books, journals etc., and of other written materials. The latter may be handwritten or typed, and could be characterized as follows

- a) handwritten i) "Medical prose" as may be found in a G.P.'s letter of referral, departmental memoranda, and so on:
ii) "clinical shorthand" such as is used in lab. reports, x-ray request, prescriptions, and certain more clinical sections of case notes.
- b) typewritten We would make a similar distinction here to that made in a) above between i) and ii). Thus we would differentiate between, for example, the 'medical prose' of typewritten G.P.'s letters, departmental administrative notices, and clinical notes/records that have been typed up.

For the reader, handwritten materials often present greater difficulty than printed/typewritten materials. For the overseas doctor to whom the Roman script and English styles of handwriting are foreign, this difficulty is compounded.

We have noticed that the Casualty Officer does have regular recourse to reference books on poisons, drugs etc.

Writing: Writing skills are in the same 'productive' relation to reading skills as speaking is to listening. Subsumed under the skill of writing, there seems to be a broad difference between the filling-in of forms (case records, x-ray requests, prescriptions etc) and the type of freer writing involved in full case reports and personal communications to other doctors. The need for legibility/accuracy in this skill is self-evident, as is the difficulty posed for, say, doctors who have trained using the Arabic script.

The skills outlined above are not in practice isolated. Usually there is a repetitive sequencing (as when the Casualty Officer first reads through the patient's background notes, then speaks to the patient, then listens before writing down the information obtained). Often also further skills are required to combine the basic ones; thus an important part of the Casualty Officer's task in consultation appears to be the "translation" of information expressed by the patient in lay terms into a hand-written form which is both professionally cogent and technically concise. The code-switching element involved here - which is so often overlooked in considerations of foreign language mastery - strikes us as being central to the doctor's communicative potential.

This brief analysis of language skills, their sequencing and interrelation, naturally needs further refinement and expansion but appears an accurate characterisation in broad terms.

4. Language Functions

What follows here is a provisional set of language functions in the consultation context. These functions result from the observation of some 150 consultations conducted by native and overseas doctors. We are aware that the set will need to be tested against broader domains of Casualty duty (for example doctors in conversation with telephonists, anaesthetists, and paraclinical staff) and that it results from what were necessarily at this stage immediate judgements. To define the functions more rigorously requires our proposed recording of a variety of selected consultations. It is worth making the point here that the labelling of the functions could be made fully to reflect the broad progress of the consultation and also serves to characterize, in an easily manageable form for the observer/analyst, the communicative value of the function in question.

Doctors' language functions in RLI Casualty

- A GREET: 'Bullo', 'Good morning', 'Mrs Jones?' etc.
- B ELICIT: (to get broad description of accident with some circumstantial detail): 'Can you tell me what happened?' etc.
- C INTERROGATE (to probe circumstances of trauma relevant to diagnosis...):
'Do you remember if your whole weight was on the finger?'
'Did it bend right back when you fell?'..etc.
- D QUESTION: (to get information during examination):
'Does this hurt?', 'Can you bend it?' etc.

- Z MAXESURE:** (to make sure that what Dr understands is what P meant):
 'Does it hurt here?'
 - 'No, not really.'
 'It doesn't hurt?'
 - 'No.'
- F EXTEND:** (to test a deduction made from P's information):
 'Can you walk all right?'
 - 'Yes'
 'So it doesn't hurt to put your weight on it?'
 - 'No.'
- G ACTION-INFORM** (to let the patient know what is being done/going to be done):
 'I'm going to put in a couple of stitches.'
 'I think we'd better have an X ray, to make sure...' etc.
- H DIAG-INFORM:** (to let the patient know the diagnosis):
 'You haven't broken anything'...etc.
- I PROG-INFORM:** (to let the patient know how the condition is likely to progress):
 'It should heal up quite quickly.' etc.
- J TREAT-DIRECT:** (to tell the patient what to do to help the cure):
 'Take plenty of rest.' etc.
- K DIRECT:** (to tell the patient what to do so that medical attention can effectively be given):
 'Can you just lie down a moment.'
 'Take this with you to X ray.'
 'Come back in five days.' etc.
- L APOLOGY:** (to apologize for hurting patient or otherwise inconveniencing):
 'Sorry! Did that hurt?' etc.
- M TALK** (to give information not strictly relevant to the consultation in hand):
 'I've seen rather a lot of these lately.'
 'Little girls tend to do that sort of thing.'
- N MED-ASK** (to get information relevant to clinical aspects of consultation):
 'Are you allergic to penicillin?'
 'Have you been vaccinated against tetanus?' etc.
- O ADMIN-ASK** (to get information not relevant to clinical aspects of consultation):
 'Do you use this hand in your work?'
 'Did you come here on foot?' etc.
- P REASSURE:** (to reassure patient):
 'Nothing serious here.'
 'Don't worry, it's all right.' etc.

- Q ACCEPT: (to acknowledge receipt of communication):
 '...Yes...'
 'I sort of twisted it round...you know...like...'
 - 'Twisted it. 'I see.'
- R LEAVETAKE: (to end the consultation): 'Right, thank you Mrs Jones.'
 'OK? Thank you.'
 'Good. See you after the X ray then...'
- S GO-ON: (to encourage patient to continue the story):
 'Well, I was playing football,...'
 - 'Mmm...'
 'And.....'
- T ANSWER: (to reply to query raised by patient/nurse):
 'Does that mean it's broken?'
 - 'Yes, I'm afraid it's broken just here.'
 'Shall I do an elastic bandage Doctor?'
 - 'Yes I think that's all it needs.'
- U REPEAT (to get the patient/nurse/addressee to repeat what he/she said):
 'What?'
 'Sorry?' etc
- V RESTATE (repeating what was said because the patient didn't catch it):
 'Can you swallow all right?'
 - 'Can I...?'
 '...Swallow all right.'
- W FEED-ME-BACK: (to check that the patient/nurse/addressee has understood/
 is listening):
 'Do you follow me?'
 'OK?'
 'Is that all right?' etc.

With reference to the aim of compiling a set of pilot learning materials by September 1974, we cannot overestimate the need to test and expand the above set of functions and their linguistic realizations on the basis of live recorded data. Such data is indispensable for the realistic simulations envisaged as central to such a learning course.

5. Integrating Skills and Functions

In 3 and 4 above it was convenient to list separately our preliminary views of observed skills and functions. In reality, and in a teaching course, these two dimensions must be cross-referenced.

The following exemplify this cross-referencing.

<u>FUNCTION</u>	<u>SKILL</u>
(1) Elicit	speak with eye-contact
(2) Diag-inform	{ speak with/without eye-contact speak over telephone write hand (1) note (2) free
(3) Go-on	{ speak with/without eye-contact kinesic-active

We mentioned earlier (II p.1 above) that we had extended our pilot study beyond Casualty to ENT for corroborative and comparative analysis. This decision has proved of considerable value.

A number of observations in the ENT out-patient clinics, the hearing aid clinic, and the ENT theatre were made. As a result of these early comparisons, we feel a) we have the skeleton of a methodology for studies extending beyond the Casualty department; b) we have some awareness of which projected learning materials might apply generally, and which others will need a more specific departmental orientation.

A ENT theatre* Because of the routine nature of operations on the occasion of our visit, and the clear professional understanding of the participants, the need for language communication was minimal. It appeared, also, that this resulted in messages of relatively low information content. What needs to be stressed, of course, is that in more complicated surgery language use would be less predictable, more varied, and with higher information content. This in turn would make proportionally greater demands on the communicative efficiency of the overseas doctor, and would prove an interesting and valuable study. Physical conditions (speech-filtering through masks, etc) and stress and tension factors play a large role in comprehension impairment.

B ENT clinics 1) Out-patient clinic: We have observed some 30 consultations given by one native and two overseas doctors. We found that the set of language functions identified in Casualty was largely applicable here, although, as might be expected, the distribution of the functions differed, and we would probably want to posit one or two additional categories (to handle utterances such as "Is there any deafness in the family?")

Our impression is that consultations in the ENT clinic may normally follow a broadly uniform and quite tightly-structured pattern. This, we felt, might be because a) ENT is a specialty, and as such deals with a more limited range of complaints than Casualty. b) (which is perhaps a consequence of a)) the clinician always bases the history-taking stage of the consultation on a standardised case sheet (with checklist) Such uniformity can successfully be exploited in the preparation of learning materials: it will be, for example, a comparatively straightforward task to prepare a learning unit to facilitate a doctor's interrogation of a patient from such a case sheet.

2) hearing-aid clinic: We were present also at a hearing-aid clinic held by an overseas doctor, in which he dealt with seven patients. Again, we were struck by the overall similarity of one consultation to another. What proved to be of particular interest to me was the implications for a linguistic analysis of language weakness co-occurring with hearing weakness.

* These comments follow from a single visit, and therefore are too limited for any adequate conclusion.

There would seem to be little difficulty on the basis of our observations and analyses so far in preparing an effective multi-media course for recently-arrived overseas doctors working in RLI Casualty and ENT. Naturally, the provisional findings indicated above need to be validated in terms of other Departments in the Hospital Group, and also against similar settings in other departments in hospitals outside the Lancaster area. We would naturally hope that our analyses and materials would be generalizable in this way.

Clearly, the value of the learning materials will increase to the extent that they

- a) reflect a cross-section of national rather than purely local experience of a single Casualty and a single ENT department in the Data base;
- b) serve, as a corollary of this, overseas doctors across the country rather than in Lancaster alone;
- c) apply in the largest measure to other departments.

Our early prediction that communicative problems of overseas doctors lay largely in the area of the interpretation of language functions in face-to-face interactions, rather than in the mastery of technical medical language, has very largely been confirmed. The problem is one of two-way intelligibility between the professional practitioner and the lay patient. In large measure this concerns a doctor's code-switching capacity. In this respect, then, the communication problems of overseas doctors and medical staff follow a pattern already well-known among other professional groups of advanced language learners for whom materials already exist. We have now begun preliminary work, therefore, on a limited set of taught and self-access learning materials, incorporating the preliminary findings outlined in this report, for implementation, after piloting, in September 1974.

VI PROPOSALS FOR THE NEXT STAGE OF THE STUDY

In the first instance we would welcome as invaluable any comments from the hospital staff with whom we have been in contact on the accuracy of the provisional findings set out above. This critical feedback will serve further to determine more specifically the follow-up stages set out below.

(Subject to approval and endorsement)

1. Participation in ward rounds for purposes of comparative analysis with the findings set out above.
2. Presence in a theatre when a Casualty Officer is assisting, to observe possible variations in language use and demands.
3. Most importantly, for the purpose of materials preparation, collection of audio-visual recorded data of consultations for extended analysis in the light of the hypotheses formulated so far.
4. Investigation of subjective/attitudinal factors affecting communicative success on the part of both patients and doctors.

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In addition to the current relevant works in the socio-linguistic field, particular mention should be made of:

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Hodlin, Sue (1974): Industrial English, Heinemann,
London.

ENGLISH LANGUAGE SKILLS FOR OVERSEAS DOCTORS AND

MEDICAL STAFF

WORK IN PROGRESS : REPORT II (May, 1974)

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Bibliography

Appendices I and II

FOREWORD

We are very grateful to the medical, nursing and administrative staff who have helped us to pursue this study in the Lancaster and Morecambe hospitals. We would particularly like to thank Mr. G. Freeman, whose original suggestions for the study we have largely followed, and whose subsequent guidance has been most valuable. We are also greatly indebted to all members of the Casualty Department at the Royal Lancaster Infirmary, with whose work the main body of our study has been concerned, and to Mr. W. Cook, the Hospital Secretary.

1. Introduction

This study forms part of an ongoing project on the topic of 'didacticization of raw language data'. The project as a whole has the double aim of a) preparing an English language course for specialist learners, viz., overseas doctors working in Lancaster; b) investigating and testing the methodology and techniques involved in building and realizing a syllabus on a basis of empirically determined communicative needs. This paper is the first of several coming out of the project, and forthcoming papers will include:

- i) an applied linguistic treatment of the 'data-based' approach;
- ii) an investigation, for purposes of discourse analysis, into doctor-patient interviews in the Casualty and ENT clinic settings;
- iii) a syllabus for an English language course for overseas doctors with special reference to Casualty and ENT;
- iv) a pilot set of teaching/learning materials for iii);
- v) a report on an experiment in perception of discursal meaning;
- vi) a report on an experiment measuring the acoustic filtering and distorting effects on speech of surgical masks within different hospital locations (for example, theatre, consulting room).

In the present paper we begin with the doctor and his work situation and move by stages into the study of language use. This progression involves the investigation of activities and tasks and their associated personnel, communicative demands and networks. Only by reference to settings/situations can characteristics of language use be specified a) in terms of a sociolinguistic analysis; b) a language course for specialized learners.

Our findings are provisional and subject to confirmation/revision in more extensive studies. Moreover, we do not claim that what is true of one department in one hospital is necessarily true elsewhere - though we would expect some measure of generality.

We have not attempted here to draw any conclusions about the form or content of an English language course for overseas doctors employed in Lancaster: this will be the subject of 1.ii) 1.iii) and 1.iv) above. But our ultimate aim of preparing such a course is reflected in the length at which,

for instance, the 'work cycles' are treated. Information about, say, patient throughput, may appear to be of rather marginal relevance to the sociolinguistic analysis - but will be indispensable in the later production of task-oriented and simulated course materials.

The methodology adopted in this study owes something to Jupp and Hodlin (1974) and Bung (1973). In the short time available for the writing of this paper we have not been able to discuss in much detail the various methodological decisions taken before and during the fieldwork. We are conscious, nevertheless, that many immediate fieldwork decisions were taken which cannot be satisfactorily recorded. But when this paper is read in conjunction with the forthcoming papers 1.i) to 1.v) above, the overall treatment should explain points not here made explicit. In particular, decisions on methodologies of data collection and analysis are considered at greater length in the forthcoming paper 1.i)

One of the values of the study, we hope, will be to emphasize the need for a sociolinguistic basis for the construction of language learning courses and to suggest the main stages in a programme of course design.

2. Background to data collection

Our a priori conception of a suitable set of data collection policies was put forward in the document constituting Appendix I. After daily observations of various departmental activities and clinical situations over a period of some six or seven weeks, we revised our methodology and proceeded on the lines put forward in Appendix II.

We began in mid-March 1974 by informally soliciting the views of a number of medical, nursing and administrative personnel (see 4.1. and 4.2. below) on several points. These included

- a) individual reactions to the aims and nature of our project;
- b) subjective assessment of overseas doctors' communicative abilities;
- c) opinions as to where our effort could most most profitably be concentrated;

We were also interested to discover the kind of activity characteristic of the various departments, with the kind and extent of their interrelations. As a result of this preliminary research, we decided to direct our main attention at Casualty in RLI (see Appendix II, p.1).

It had become clear that the next step was to observe live doctor-patient consultations, since it seemed to us highly probably that interactions which we had already informally observed between the doctor and the medical/nursing staff would radically differ from the stranger-to-stranger doctor-patient interviews - in terms of both cognitive and attitudinal-behavioural factors.

It was first necessary to seek the consent of every patient at whose consultation one of us was going to be present. We did this by presenting to each patient, on arrival at the Reception desk, the following notice:

COMMUNICATIONS PROJECT

We have in the Casualty Department some language researchers who are making a study of communication difficulties of overseas doctors. One of these researchers may be present when you are seeing the doctor. If you have any worry or objection to one of these non-medical people being present, will you inform the Reception.

The medical and nursing staff were agreeable and sympathetic to our work.

We followed the doctor into the consultation cubicle where the patient was already waiting (see 5.1. below) and observed the entire doctor-patient interaction in as self-effacing a manner as possible, making notes on clip-boards.

We nevertheless felt that our presence might be an inhibiting/constraining influence on the interaction from the patients point-of-view. We therefore requested and were given white coats, but continued to identify ourselves by means of COMMUNICATIONS PROJECT badges. We found that it was possible to be relatively unobtrusively present so long as we avoided establishing any eye-contact with the patient.

At the outset we observed some thirty to forty consultations. (The inexactness of this figure is unavoidable, because of the incomplete, truncated/curtailed nature of some consultations.) During another ten or twenty consultations we drew up a tentative FUNCTIONS checklist (see 7.3.2. below). Over the course of a further one hundred and forty to one hundred and fifty consultations we then refined our set of FUNCTIONS.

For comparative purposes (see Appendix II, p.9) we also observed some forty consultations at ENT clinics. These were generally of greater duration and complexity.

3. Overseas medical staff: English language backgrounds

The information set out below is based on evidence provided by the non-native doctors we have informally interviewed during our observations in the Lancaster and Morecambe hospitals.

These overseas doctors can be divided broadly into two groups, 1) those from the Middle East, 11) those from the Indian subcontinent.

The Middle East

We interviewed doctors from Egypt, Sudan, Syria and Jordan. With the exception of Syria, the following pattern of English-medium education and the subsequent use of English emerged. English was studied as a foreign language at secondary school for a limited number of hours per week. After this, the prospective doctors went on to university where they studied their medicine in English (together with medical Latin), though most of the teaching was conducted in Arabic. Moreover, they were trained to take clinical notes and write case histories in English, so that when they began to practise, they would be in the curious position of interviewing a patient in Arabic while perhaps simultaneously taking down notes in English.

In Syria although English was studied at secondary school, prospective doctors studied medicine in Arabic and medical Latin, and used only Arabic when practising, both for written and oral purposes.

As a result, doctors coming from the Middle East can be generally expected to deal better with demands on their reading and writing skills than with those on their aural/oral skills.

The Indian subcontinent

We spoke to doctors from India, Pakistan and Sri Lanka. English played a far greater role in education here. A great deal of secondary education was conducted in English - English is a joint official language in India together with Hindi - and the medium of medical instruction at university level was English, which was also used by doctors in consultation for purposes of oral communication and to take down case notes etc.

This greater exposure to English was reflected in the greater fluency with which doctors from the subcontinent were able to handle face-to-face interactions, although dialectal and cultural differences caused minor problems.

4. Work situation

It seems appropriate at this point to provide basic information

about the gross organization of NHS hospital groups and departments within them. As has been made clear, our data-based methodology entails empirical study: such value as our analysis of language demands may have depends on the setting of skills and functions (see 7 and 8 below) in the work context.

1. The organization of hospital groups and departments:

The hospital and specialist services with the family practitioner (GP) and personal health (old Local Authority) services are the responsibility of the Secretary of State for Social Services. Assisted by the Department of Health and Social Security, she administers the hospitals through regional health authorities (RHAs), of which there are fourteen in England. The RHAs are responsible for regional strategic planning and the co-ordination and supervision of the area health authorities (AHAs), of which there are ninety. The RHA is responsible for the appointment of medical staff of consultant and senior registrar gradings. The AHAs are responsible for planning, developing and appraising local services to meet the needs of the communities living in the districts. The day-to-day running of the hospital and health services is in the hands of a district management team (DMT) which consists of medical, nursing administrative and financial representatives.

Very few hospitals are large enough to handle the entire range of medicine and surgery. The hospitals in a district often, therefore, deal variously with the general and specialized branches of medicine and surgery. Thus in the Lancaster district RLI and QVH cater for obstetric, gynaecological, surgical patients and casualties; Beaumont has the specialties of paediatrics, ENT, chest and skin; psychiatry is at Ridge Lea and the Moor Hospital - which also has geriatrics. For convenience, out-patient clinics in the specialties are often held in different hospitals on different days in rotation. And a hospital doctor usually shares his time among two or more hospitals in the group.

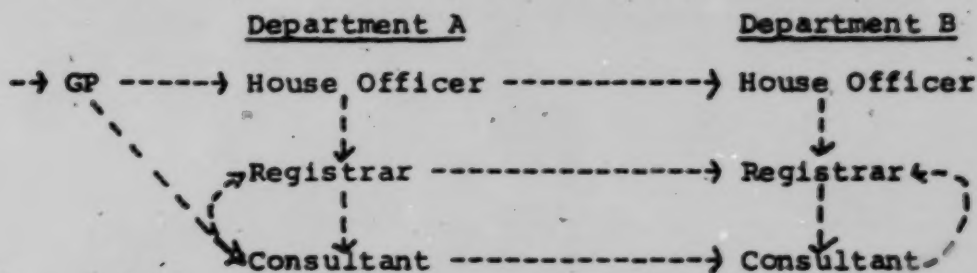
4.1.1. Medical staff:

The range of medical posts in a hospital, in descending order of seniority, is: Consultant, Senior Registrar, Registrar, Senior House Officer, Pre-Registration House Officer. As might be expected, seniority depends on qualifications and experience. The hierarchical structure of the medical staff broadly reflects the nature of the work done. Simpler routine cases are dealt with by more junior doctors, leaving the Registrars and Consultants free to contribute their expertise where it is most needed. A House Officer who judges that a case exceeds his experience and competence calls a Registrar. If the Registrar then decides

that he, too, is not confident of handling the case adequately. he calls the Consultant. The most senior doctor present makes the decisions, instructs, and takes the responsibility. The status of the Consultant is understandably very high not only in his speciality, but in the hospital at large. The roles of subordinate doctors in his presence might vary between and combine those of assistant, reporter, student and clerk.

4.1.2. Departmental activities and cross-relations:

Treatment in any hospital department except Casualty must normally be requested by a GP or other hospital unit. (Casualty patients may, though usually do not, come on a GP's recommendation). A GP sends a patient with a letter to a hospital department; after attention/treatment the department concerned sends a letter back to the GP with a report and any necessary further recommendations. Treatment within the departments may be given at clinics (for out-patients) or in wards/theatres (for in-patients). The decision whether or not to admit a patient is usually made after examination at a clinic or in Casualty. In a relatively small number of cases it is possible that a patient needs treatment in more than one department, while it is sometimes the case particularly in Casualty) that a patient may be referred (i.e. passed on) to another specialised unit. A typical range of patient 'paths' is shown in the diagram below. A GP will refer a patient to the House Officer in the department concerned if it is a question of admitting the patient to a hospital ward: out-patients are referred to the Consultant in the department (or to his Registrar if for some reason the Consultant is absent). The House Officer may refer the patient to the Registrar, who may in turn refer him to the Consultant. Where the patient has been referred by the GP to the Consultant, the latter may then hand the case on to his Registrar. Across departments, doctors generally refer patients to their peers in other departments.



The status of the different ranks of medical staff, however, holds across the departmental boundaries: a Consultant in obstetrics is in every respect the peer of a Consultant in chest diseases.

4.1.3. Doctors in contact with other staff:

We have not been able in this particular study to consider in detail doctors' contact and relations with other hospital staff such as orderlies, paraclinicians (pathologists etc.) and administrators. But the role of the nursing staff is very central to the doctors' work, and some of the communicative demands arising from this are studied below. According to their rank (which again depends on qualifications and experience), the sisters, staff nurses, nurses and student nurses may be responsible for more medical tasks or more routine medical care. The sisters and staff nurses are called upon to make responsible decisions and perform certain clinical tasks. They expect to act on doctors' instructions, but are often required in emergency situations to take an initiative until a doctor arrives. The support-role of the nurses is sometimes combined with something of an advisory role with junior doctors in certain cases: a relatively inexperienced doctor will occasionally welcome and accept the judgement of an experienced nurse (and this advisory role is extended with some of the more recently arrived foreign doctors). The nursing staff, then, works in the closest collaboration with the doctors, following their instructions when any are given; the more senior the nurse, the greater the responsibility she will bear. A good working relationship between doctor and nurse is therefore of the first importance.

4.2. Choice of location for study

After visits to ENT (Beaumont), Geriatric (Moor), Psychiatric (Ridge Lea) and Casualty (RLI), we decided to concentrate our efforts on the consultation situation in Casualty, supported for contrastive and corroborative purposes by visits to ENT units. A number of reasons led to the decision:

1. Recently arrived foreign doctors often work in Casualty before going on to a specialty - it is therefore in many cases their first experience (outside the preliminary period of assessment under a Consultant) of practice in U.K.
2. Language communication in the casualty consultation seemed to demand a higher degree of immediate accuracy and 'first-time' comprehension than, for example, might be the case with a ward round: the doctor in Casualty often sees a patient only once, and has to rely entirely on information obtained from the patient during the interview. In more serious cases, where he has to piece together information from relatives and ambulancemen, the communication activity becomes much more complex. It would seem

that in wards and clinics, by contrast, the opportunities for corroborative follow-up investigation alternate the requirement of immediate successful communication.

3. A corollary to (2) is the need for a degree of speed in attending to the simpler casualty cases - when the doctor, faced with a queue of patients has to elicit all details relevant for his diagnosis and treatment in as short a time as possible. Clearly, too, when an incoming patient's condition is critical, speed in accurate communication will be at a premium.
4. Since a proportion of Casualty patients are referred to other departments, the casualty officer is often called upon to make contact and arrangements with a wider variety of both medical and non-medical personnel than might be the case in, say, the ENT clinic. This referral and contact function (often at a distance, in writing and over the telephone) entails a practical command of a broader range of language skills.

The Casualty Officer, then, has to be able to communicate with many different people, under conditions of some stress, and via a variety of channels.

5. Patient throughput

We decided to divide incoming patients into two categories, 1) ambulatory, 11) stretcher-borne.

A. Ambulatory

- 1) Reception: incoming patients first went to the reception desk. Here they were classified as either

- 1) new patients, for whom a Case sheet had to be made out (including such details as Surname, Other Names, Home Address, Sex, Occupation etc);

- or 11) old patients, for whom such a Case sheet had already been filled in on their previous visit(s).

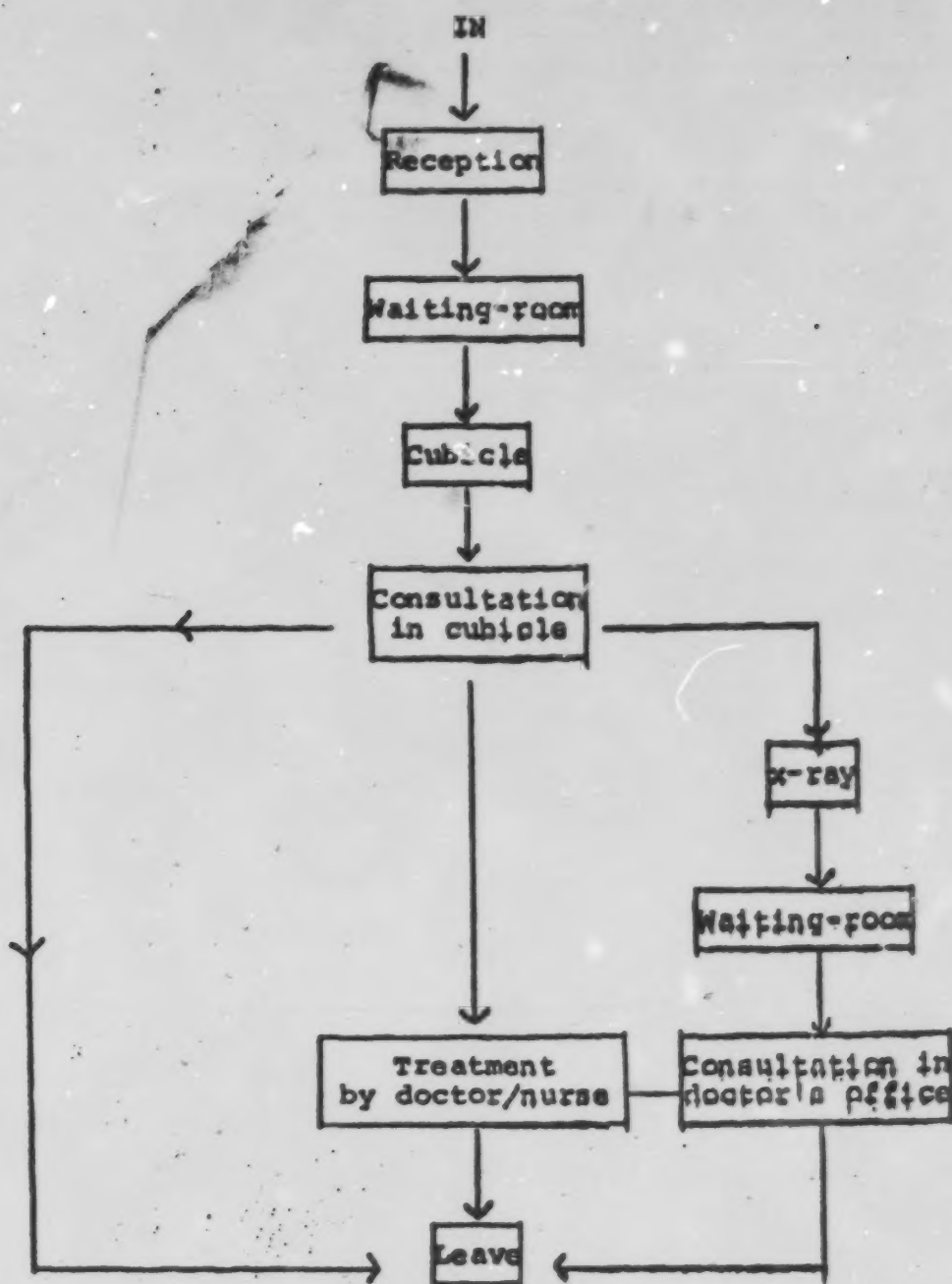
- 2) Waiting-room: the patient then proceeded to the waiting-room, while his/her case sheet was handed on to a nurse.

- 3) Cubicle: there are three cubicles in the Casualty department which are used for consultations between the Casualty Officer and incoming Casualty patients. When a cubicle became vacant, the nurse called out the patient's name. The patient went into the cubicle and the case sheet was clipped onto the outside of the cubicle door, so that the doctor could take it as he entered the cubicle.
- 4) Consultation in Cubicle: then followed the consultation in the cubicle, in which the patient was interrogated and physically examined by the CO.

At this stage there were three possibilities:

- i) if there was no need for any treatment, the patient was free to leave;
- ii) if the doctor decided that treatment was needed, he either treated the patient himself or directed the nurse present to administer the prescribed treatment; the patient was then free to leave;
- iii) in cases where the doctor felt that an x-ray was necessary, the patient was required to go to the x-ray department. After being x-rayed, the patient returned with the x-rays to the Casualty department, where he/she gave the x-rays to the nurse in attendance and waited in the waiting-room until the doctor was able to examine the x-rays. He then summoned the patient into his office for a further consultation. At this stage the patient might require treatment or be told that he/she was free to leave.

The above sequence is presented in the flow-chart below:



In a consideration of the Casualty Officer's activities during the above patient throughput sequence, it is necessary to distinguish between cases which do not require x-ray and those which do.

Casualty Officer (cases not requiring x-ray)

Glance at pre-notes: the CO undipped the case sheet from the front of the cubicle and quickly glanced over them on the corner of the cubicle. These notes gave him a brief history and warned him of the nature of the complaint.

See patient: the CO then saw the patient in the cubicle.

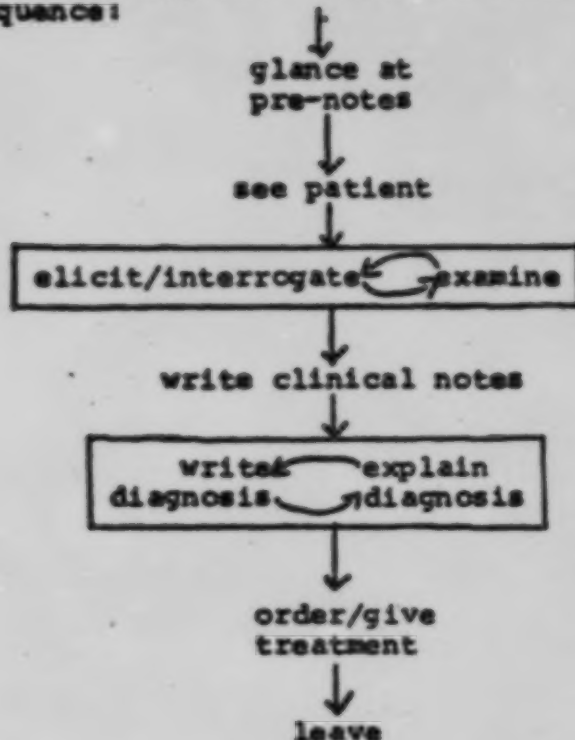
Elicit/interrogate and examine: the doctor now interrogated the patient (or the patient's relatives in the case of small children) to obtain a further case history, and also examined the patient. These two operations might occur simultaneously, although interrogation usually preceded examination.

Write clinical notes: during and/or after the interrogation and examination of the patient, the CO noted down his clinical findings.

Write/explain diagnosis: the CO, having arrived at his diagnosis noted it down on the patient's case sheet, and also explained it in lay terms to the patient.

Order treatment: the CO then prescribed the treatment he considered suitable. He might treat the patient himself or instruct the nurse to administer the treatment. Having dealt with the patient, the CO then went on to the next cubicle or returned to his office.

The following flow-chart illustrates the sequence:



Casualty Officer (cases requiring x-ray)

In cases where x-rays are required, the cycle is the same as the above as far as the write/explain diagnosis stage, where the diagnosis is necessarily provisional on the x-ray findings.

Order x-ray: the CO orders x-rays to be taken of the relevant areas. The sequence is now interrupted while the patient goes to the x-ray department.

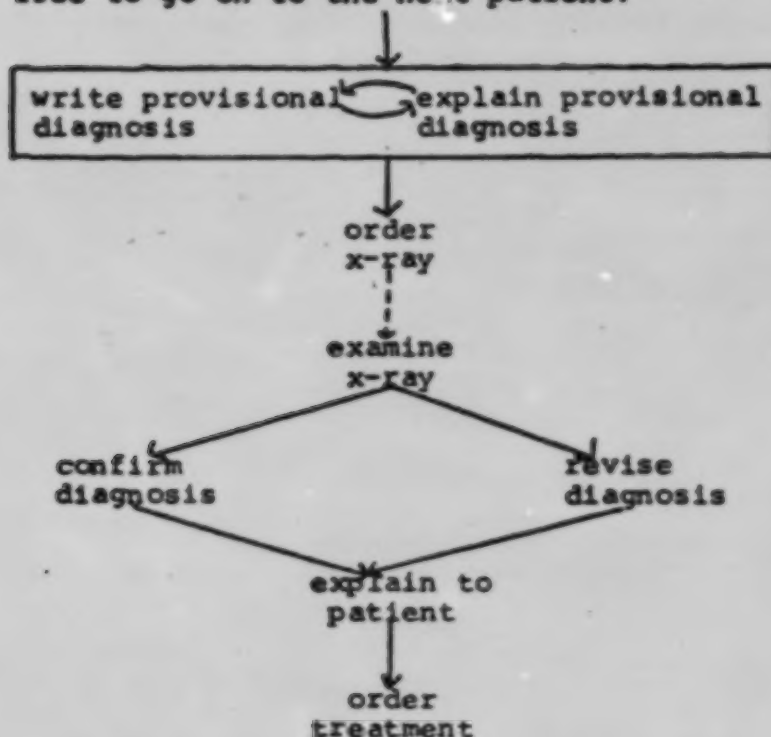
Examine x-ray: when the x-rays are brought back, the CO examines them in his office.

Confirm/revise diagnosis: after examining the x-rays, the CO either confirms or revises his provisional diagnosis.

Write down/explain diagnosis: the CO then notes down his diagnosis and explains it to the patient.

Order/give treatment: the CO either treats the patient himself or directs the nurse to do so.

Having dealt with the patient, the CO is now free to go on to the next patient.

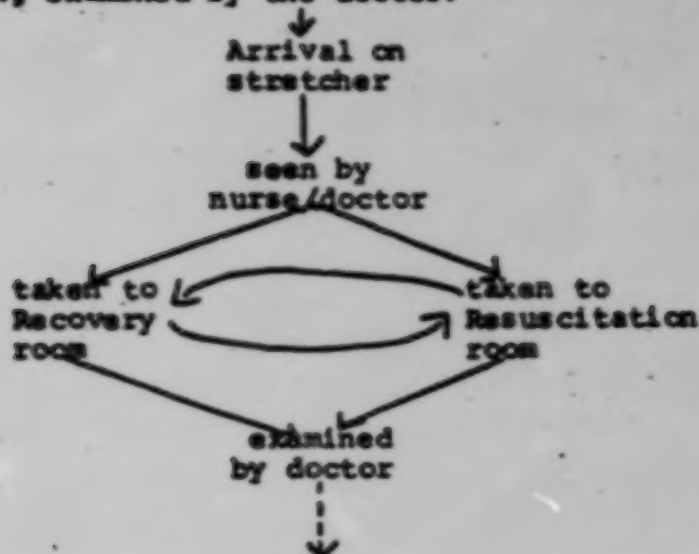


B. Stretcher-borne

In cases where a patient is brought in on a stretcher, the throughput can be broadly divided into three stages.

I Arrival Sequence

When the patient is first brought in, he/she is normally first seen by a member of the nursing staff (in exceptional circumstances the doctor may have been forewarned by telephone to be standing by). The patient is then taken to either the Recovery room or the Resuscitation room before being examined by the doctor.



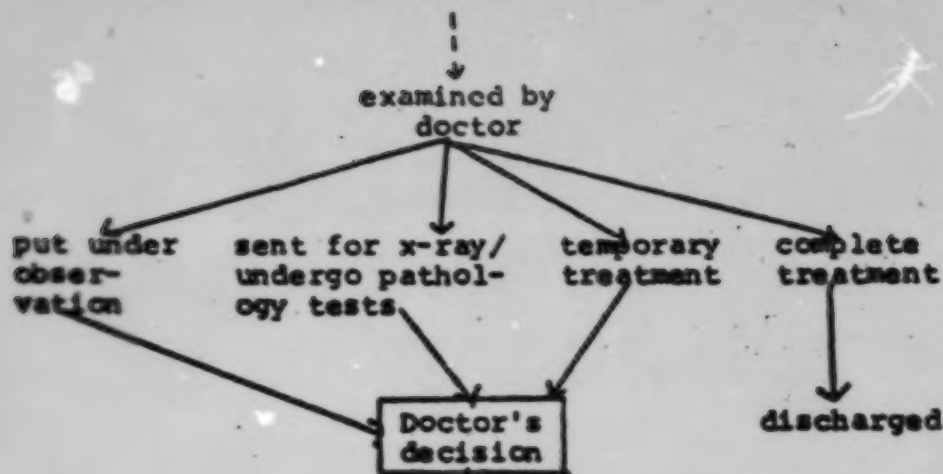
II Investigation Routines

After the CO has examined the patient, there are several possible outcomes:

- a) the patient is kept under observation for a period of time;
- b) the patient is sent for x-ray and/or undergoes pathology tests (in cases where the patient must not be moved, portable x-ray equipment is used);
- c) the patient is given the treatment necessary to cure his condition (and discharged);
- d) the patient is given temporary treatment to ensure his/her survival.

(The point should be made here that the above options are not mutually exclusive).

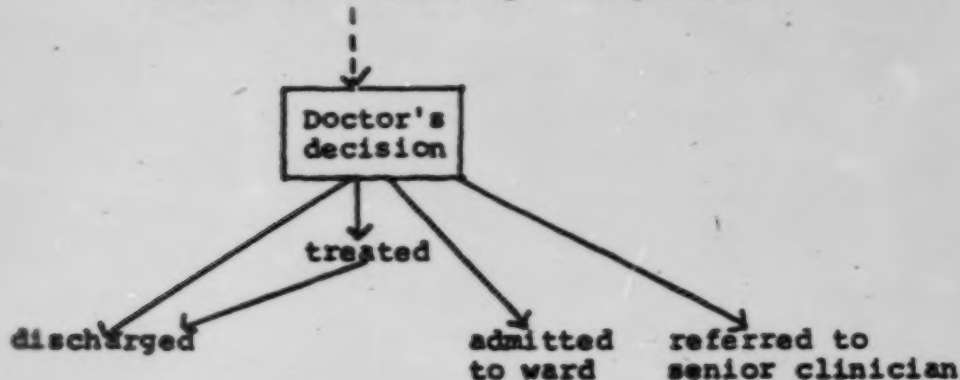
This stage is followed by the CO's making a decision about the patient:



XII Further Care Routines

What follows now depends on the decision reached by the CO. Basically there are four options:

- a) the patient is discharged;
- b) the patient is given treatment and discharged;
- c) the patient is admitted to a ward in the hospital;
- d) the patient is referred to a more senior clinician (e.g. a registrar).



Doctor Activities

It is convenient to divide the doctor activities during the same period also into three stages.

I Information gathering

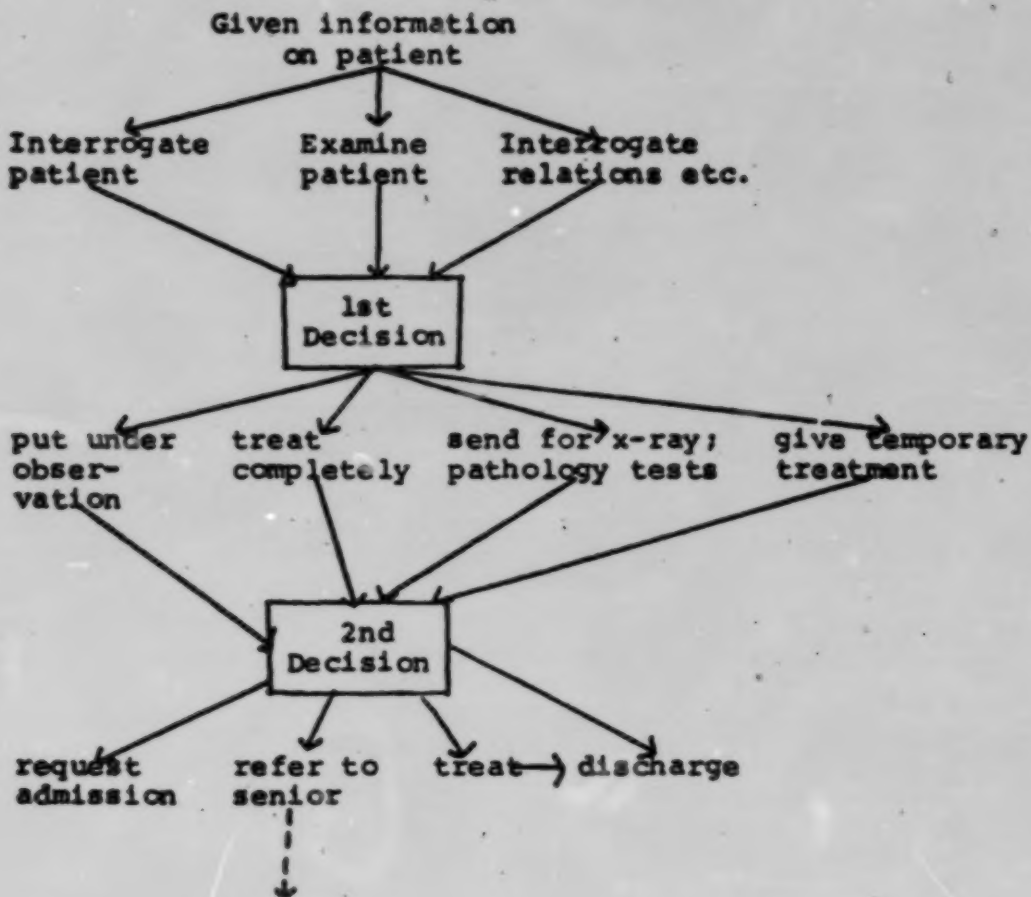
The CO is informed that a patient has been brought in to Casualty. He proceeds to examine and interrogate the patient: in cases where the patient is unconscious, the doctor will examine the patient and interrogate any relatives/witnesses who accompany the patient.

II Second Decision

At this stage again there are four options. The one that is followed may be determined largely by what has gone before:

- a) the CO discharges the patient;
- b) the CO treats the patient before discharging him;
- c) the CO has the patient admitted to a ward;
- d) the CO refers the patient to a more senior clinician.

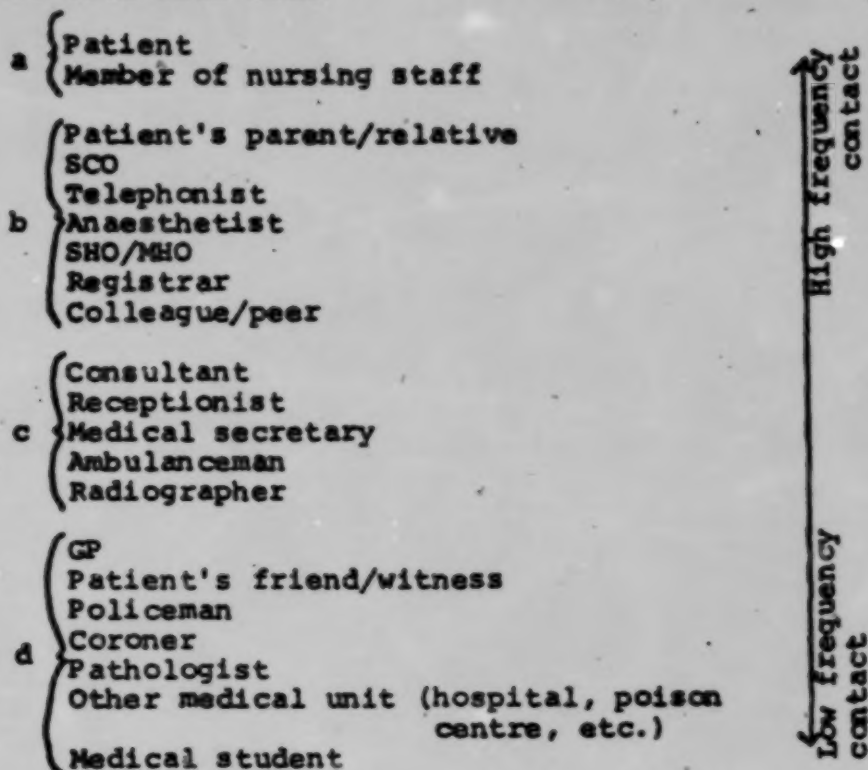
The following chart exemplifies this:



6. The communication setting

6.1. C.O.'s interlocutors

The following list of the Casualty Officer's interlocutors was arrived at after observation and informal interrogation. It is intended to show in rough groupings, on a high/low frequency continuum, the relative time spent by the CO in communication with each.



We would expect to have to revise the content and ordering of this list after feedback from experienced staff.

6.2. Communicative networks

6.2.1. In carrying out the various tasks described in 5 above in contact with the various interlocutors listed in 6.1., the CO communicates across a variety of networks.* His language use will clearly vary accordingly. While we have not yet been able to make any systematic study of such variation, we would want to do so in any future extended analysis. The

* network is here used to indicate the pattern of communication between interlocutors of differing statuses and assuming different roles in a setting and via a number of communication channels.

suggestions below are based largely on prediction and impression. We feel, however, that some approach to the description of communicative networks is needed, and that the tentative approach here adopted, although incomplete, may provide a basis for future development.

6.2.2. Incidental and influential aspects:

In the description of communicative networks it seems useful in a study of language demands to distinguish between 'incidental' and 'influential' aspects. What we mean here is that some facts about such networks may have no bearing on language use, while certain other characteristics of the networks may quite considerably affect the language communication. Thus the fact that the CO invariably calls for the anaesthetist over the telephone channel is of no explanatory value to a correlation of communicative networks with language demands: it merely tells us that telephone talk with that other member of the staff is one of the CO's requisite skills. On the other hand, to know that the CO's communication with the anaesthetist may often be in a 'live' network involving a patient, a nurse, and perhaps sometimes a more senior clinician is useful, because it implies that CO - Anaesthetist contact is likely to entail various language demands in the various possible networks. In what follows we have omitted purely 'incidental' aspects of the networks and aimed to analyse such variables as are likely to affect the communication in more or less predictable ways.

6.2.3. Influential variables:

The main influential variables, we suggest, are

- 1) presence: A network may be entirely present, that is to say holding between participants who are in reasonable proximity and face-to-face interaction, or remote (as in telephone or written communication), or in varying degrees present-remote (when both present and remote communications are involved). The CO is most often involved in present networks. His remote networks are principally two-way telephone networks, and it is unusual for him to participate in present-remote networks (though it is possible on occasion for him to 'share' a telephone interaction with the nurse or other participant by his side.

2) size:

The size of the network affects the communication in terms of both code and broader 'communicative competence'. When more than two participants are involved, third-person reference assumes importance; when there are more than three in the network, modes and devices of address and deixis become more complicated. Also, in the larger networks necessarily involving more than one nurse or doctor or patient (accompanied or unaccompanied), aspects of status, role and initiative will differ.

3) extendability:

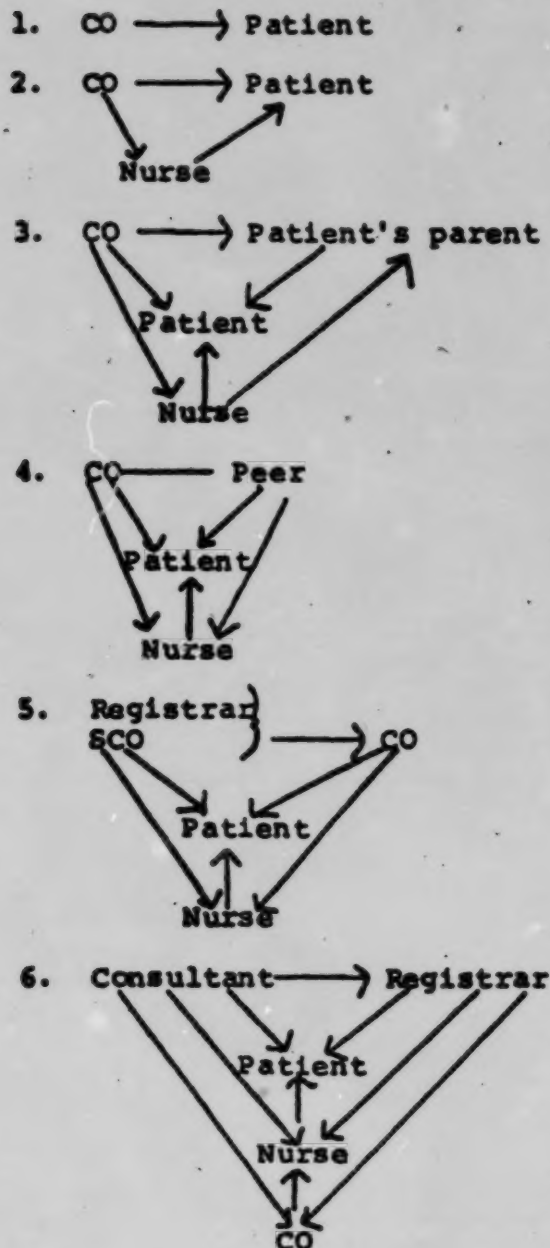
The extendability, or potential range, of a network is likely to affect the subjective framework (the presuppositions) of the interaction as well as the possibility of code-switching. Thus when a patient knows that a 'second opinion' should be available to him, he may handle his side of the interaction more conditionally than another patient who believes that the doctor will alone diagnose and treat him. When there is the possibility of another (medical, nursing, administrative, lay or other official) participant being brought into the network, there may be perceptible differences in the extent to which demands are made on participants' language resources to finish the communicative event: a doctor who intends to refer a patient to another clinician may not need or wish to inform the patient fully about his condition.

4) initiative:

The most easily discernible variables, perhaps, in the communicative networks, are those of role and status, which determine who, among the participants, takes the 'dominant' or 'initiative' part in the interaction. So in a simple Casualty consultation it is the doctor who initiates and conducts the interaction by virtue of his status/role. When a more serious case entails calling in the Registrar, it is he who will take over the initiative by virtue of his superior status and its concomitant role, while the CO, now subordinate to the Registrar, still continues to be 'dominant' vis-a-vis the nursing staff and patients (though his professional role having changed and his participation in the network having been radically redefined, the subject matter of his interaction will cor-

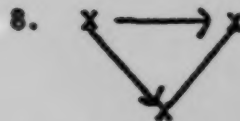
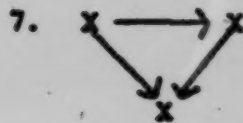
respondingly differ).

The following network diagrams illustrate some common typical 'directionalities' of dominance/initiative in Casualty. A line between two participants shows communicative latency. When the line forms an arrow, the normal initiative tendency is indicated. Thus in network 1. the CO and the patient communicate with each other, but the initiative is taken by the CO:



The network diagram clearly reflects the situational/communicative status of the

participants relative to one another: the participant who is at the 'receiving end' of fewest arrows is the initiator, while the patient will normally 'receive' the most arrows. Between the two, in varying degrees of initiative, will often be nurses and other doctors. 'Abstract' network diagrams are useful to show the size, range, and communicative directionalities of networks, while leaving the participants unspecified in respect of nominal status and role:



Seven would apply equally well to a Registrar-CO-nurse network as to a CO-nurse-patient network, while 8. can represent a CO-nurse-nurse network or a CO-peer-patient network, to mention only two.

The combination and cross-impact of the four main network variables of liveness, size, extendability and initiative will constitute various 'communicative matrices' onto which communicative objectives (as determined by task objectives) can be mapped. These objectives are considered in 7.1.1. below.

4. The entropy variable:

The relative seriousness of a patient's condition is important at any stage of a doctor's carrying out of his duty. One of the language demands made upon him, we suggest, is to be able to communicate accurately with others about different cases and their relative gravities. It will be part of his communicative competence to know what verbal/linguistic means are needed (and, of course, how to exploit them) for this end. For we propose that it is not only by linguistic means that such communication may be effected: information may be carried, intentionally or unwittingly, across a network by the mere presence or absence of a signal in the channel. Thus, given that certain other conditions of a priori knowledge and probabilities are fulfilled, the Registrar answering a telephone call from the CO knows from the very occurrence of the telephone call that there is a relatively serious case in Casualty to which he will probably be expected to attend.

The CO-to-Registrar telephone connection is therefore, in the CO's repertoire of communicative networks, one of very low entropy: in perhaps nineteen times out of twenty, the CO would not call the Registrar on the telephone except for this narrowly defined purpose/message. An instance of correspondingly high entropy would be the CO answering an incoming telephone call from outside the hospital - which might be from a doctor or a friend or an official body, with no particular probability in respect of message; or it could be a mistake.

Viewed in this way, the entropy variable would underlie and correlate with the four variables of 6.2.3. above.

7. Communication demands

7.1. Pragmatic communicative objectives for the CO

Our aim here has been to specify as concisely as possible the broad task-oriented communicative objectives of the CO. It will be seen that these objectives largely account for all occurring combinations of language skills and functions (see 7.3. and 7.4. below) in the Casualty setting. It is worth noting, too, that the set of objectives needs only fairly slight modification to serve a teaching/learning course. The objectives, then, are the communicative tasks which the CO needs to be able to perform in the course of his duty.

As it is a methodologically justifiable strategy to consider the skill of speaking to be separate but potentially inter-dependent with the skill of listening, so we here, for analytic convenience, group the objectives in four categories according to two binary contrasts. Cognitive objectives concern facts, information and the 'outside known world'. Affective objectives concern feelings and relationships. The communicator can at any moment be broadly characterized as acting to initiate or to respond. The four categories, then, are

1. cognitive-initiate;
2. cognitive-respond;
3. affective-initiate;
4. affective-respond.

The following list is drawn up on the strength of our observation of approximately 200 doctor-patient consultations in Casualty. We would stress, however, that our concern during these observations was much more with language function and skill than with pragmatic communicative objectives, and that further research might produce additions to, or revisions in the list. To the extent, though, that our corroborated descriptions of CO operational algorithms, and our taxonomy of language functions (see below) are satisfactory, the list has some face reliability.

1. Cognitive-initiate:

- a) to elicit adequate verbal information from the patient to support any physical examination so as to arrive at a satisfactory diagnosis/treatment/prognosis/therapy;
- b) to inform the patient clearly of the diagnosis (/prognosis), giving any necessary instructions for the therapy;
- c) to obtain (/check on) information relating to patient from nurse/other doctor/ambulance-man, et al.;
- d) to give instructions to nurse/paraclinician for treating/caring for the patient;
- e) to call in and inform another doctor (anaesthetist/registrar, etc.);
- f) to manage patient-plus-relative consultations involving 'diverging messages' communication;
- g) to manage multiple-addressee communication situations as dominant/initiating participant (as in theatre);
- h) to record case notes and patient reports in handwritten form and impart case information to GP's by letter.

2. Cognitive-respond:

- a) to let the patient/relative/ambulance-man/nurse know how much of the message has been understood, and whether to continue, repeat or stop;
- b) to reply adequately to questioning by patient/nurse/doctor, etc;
- c) to select and accurately understand medical/clinical information in handwritten, typed or printed texts.

3. Affective-initiate:

- a) to manage starts and finishes of consultations smoothly and time-economically, maintaining a modicum of interpersonal relationship and inspiring basic confidence;
- b) to evoke in the patient the belief/knowledge that there is no cause for anxiety or that the condition calls for calm concern;
- c) to maintain in the patient a conviction that he is sympathized with, and can and will be helped efficiently towards recovery and cure.

4. Affective-respond:

- a) to 'read' accurately subjective/attitudinal mitigators in a patient's message.

.2. Channels

A necessary stage on the way to drawing up a complete list of language skills required by the CO was to examine which channels are available to the CO, and which of the available channels he regularly exploits in fulfilling his pragmatic communicative objectives. Since little or no research has been done to characterize communication on the less accessible channel of touch to the extent of producing some sort of working model, we cannot claim more than common-sense value for our findings in this respect. And, like our assessment of the relative frequency of the CO's contact with his various interlocutors, the following assessment of channel use needs the corroboration of exhaustive observation in the framework of a well-developed methodology.

As particular qualities of the participants in terms of status and role tend to determine (or at least make more probable, and also limit) their respective communicative functions in an interaction, so properties of the setting of an interaction will decide which communicative channels are available to, and used by the participants, thus to some extent determining their requisite communicative skills.

The Casualty setting, from the point of view of channel analysis, is interesting in these respects:

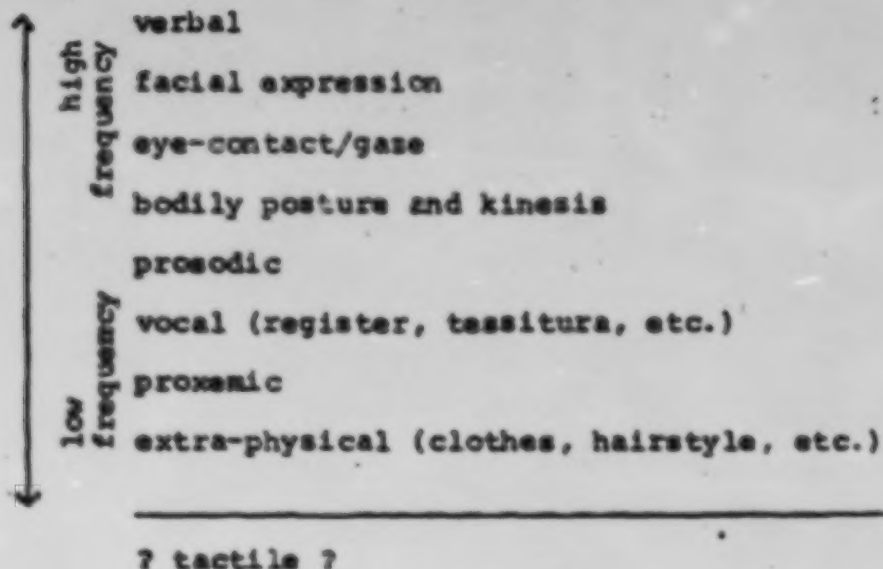
- a) The very nature of the activity for which the setting exists, i.e. medical attention, pre-supposes physical proximity and/or contact more than perhaps any other universal social/institutionalized 'transaction' in which participants are usually strangers.
- b) Depending, of course, on the case, the doctor may be able to carry out most of his strictly clinical duty - in the sense of discovering what needs to be treated and how it should best be treated - by means of channels which most commonly otherwise play only a peripheral or 'modal' part in communication. Thus a broken bone could be diagnosed by palpation with minimal verbal or sub-vocal feedback about pain on the speech channel. In some such cases it may be that different channels are used to carry different messages in parallel through the interaction: the doctor may manage his strictly clinical communication, as suggestion, on the tactile channel, while

exploiting say, a speech channel or the facial expression channel for a REASSURE function. The setting in some measure, therefore, reverses the common use to which interacting strangers put the available channels - the 'message' being verbal, the 'paramessage' non-verbal. (Analysis of this kind seems to throw some light on what is popularly perceived as the 'bedside manner'.)

- c) The more serious the patient's condition, the less use, as a rule, the doctor can make of the speech channel - and the more important it will be for him to 'read' accurately the non-verbal information he obtains. (It is here that it becomes hard to draw any line between 'communication' and 'examination': to what extent is someone's pulse or temperature a 'message'? It seems reasonable to limit 'communication' to those information-carrying variables over which a participant has, or with practice could have, control at the moment of interaction. Unconscious, one is hardly a participant.) In certain cases, presumably, pathological data could be corroborated or even mitigated by extralinguistic/indexical factors of dress, cleanliness and the like.
- d) One aspect of channel in the clinical setting must be unique: the doctor may bring a channel into use not so that it can carry a message, or so that he may 'clear' it in readiness for carrying a message, but so that he may test it, in the engineering sense, as operative and efficient. More exactly (to make the necessary distinction between a channel and the physiological capabilities in which it consists), the doctor may elicit the use of a channel so that he can study clinical aspects best revealed through its use. Thus he may encourage a patient to talk irrelevancies if he wants to assess the condition of the patient's throat (in a case of suspected caustic poisoning, for example); He may speak to the patient not to communicate a message but to test the patient's hearing. He may study a patient's gestures with an eye for physical mobility rather than any paramessage.

In the light of the points made above, we do not feel it is appropriate to categorize the channels used in the Casualty setting according to the traditional 'linguistic', 'paralinguistic' and 'extralinguistic' criteria. Rather, we list all the channels which we have observed in use or believe might be used, and assign to each an impressionistic relative specification of its importance in terms of its relative frequency of use (its importance to the clinical task is of course not within our competence to decide: this could

only be established by extensive investigatory rehearsal of the interaction with the doctor in question).



7.3. Language skills

It is intended in our forthcoming applied linguistic study (see 1.1. above) to examine how channels, language skills and speech functions can be seen to fulfil, in varying combinations, pragmatic communicative objectives.

The four traditional skills of listening, speaking, reading and writing are all practised in the Casualty situation. We have subdivided them as follows (and add our impressionistic assessment of their relative incidence):

Listening A

A distinction could be made between listening to live speech and listening to telephone speech.

a) Telephone speech: this may suffer from varying degrees of distortion and be to a greater or lesser extent contextualised. Thus the skill of understanding the anaesthetist's replies over the internal telephone network should be relatively easier to master than the ability to handle an incoming call of a largely unpredictable nature from a G.P.

b) Live speech

1) with eye contact

When the doctor can see his patient's facial expression, he is able to - and usually needs to - register meanings expressed both verbally and non-verbally. If the patient's expression and gestures reinforce the

verbal message, the processing load is reduced, but the doctor must also be sensitive to contradictions between the verbal and non-verbal messages. For example, with an anxious patient, his facial expression may betray his explicit reply.

ii) without eye contact

There is some obvious similarity between this and telephone listening (see above), although here the context is more apparent. Since there is only a verbal message the part played by such factors as intonation and word stress, speech hesitations etc. is greater.

Speaking:

What the doctor has to be capable of in a receptive mode in listening skills relates to his productive speaking capabilities. There is a need for greater explicitness coupled, in principle, with increased 'redundancy' in situations where the doctor cannot rely on facial expressions to carry part of the message. In speaking over the telephone it is often necessary to use, quite consciously, an 'over-correcting' style of speech to compensate for distortion and noise in the channel.

Reading:

The sub-skills here are broadly divisible between the reading of published materials such as books, journals etc., and of other written materials. The latter may be handwritten or typed, and could be characterized as follows

a) handwritten

- i) "Medical prose" as may be found in a G.P.'s letter of referral, departmental memoranda, and so on:
- ii) "clinical shorthand" such as is used in lab. reports, x-ray request, prescriptions, and certain more clinical sections of case notes.

b) typewritten

We would make a similar distinction here to that made in a) above between i) and ii). Thus we would differentiate between, for example, the 'medical prose' of typewritten G.P.'s letters, departmental administrative notices, and clinical notes/records that have been typed up.

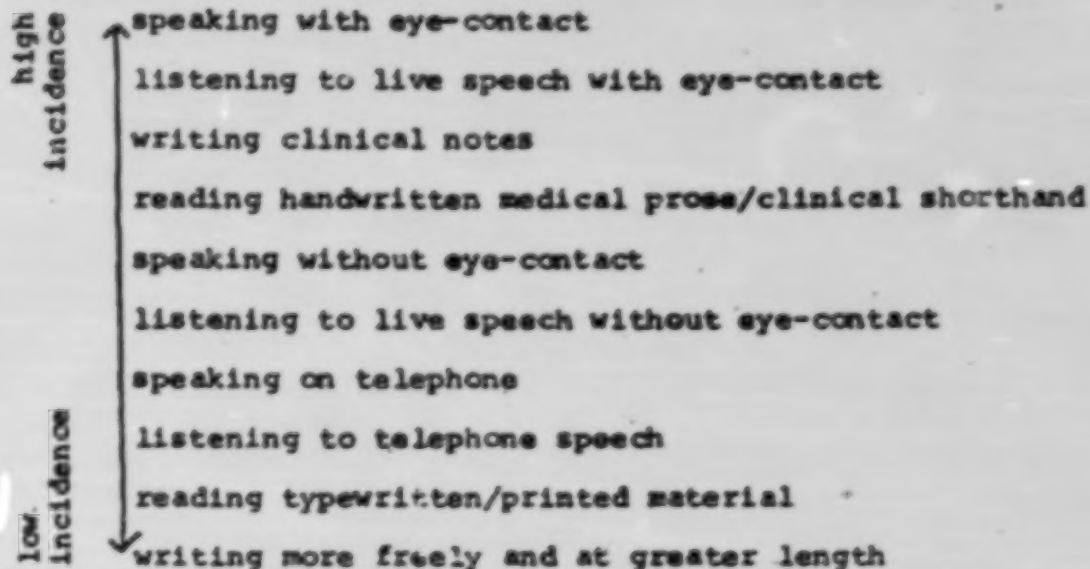
For the reader, handwritten materials often present greater difficulty than printed/typewritten materials. For the

overseas doctor to whom the Roman script and English styles of handwriting are foreign, this difficulty is compounded.

Writing:

Writing skills are in the same 'productive' relation to reading skills as speaking is to listening. Subsumed under the skill of writing, there seems to be a broad difference between the filling-in of forms (case records, x-ray request, prescriptions etc.) and the type of freer writing involved in full case reports and personal communications to other doctors. The need for legibility/accuracy in this skill is self-evident, as is the difficulty posed for, say, doctors who have trained using the Arabic script.

Relative incidence of language skills:



Of course, the above skills are not in practice discrete. There is usually a fair measure of repetition in the sequencing - at least in the consultation situation. Thus the CO will first read through the patient's background notes, then speak to the patient, then listen before writing down the information obtained.

Often, too, further skills are required to re-deploy these basic ones. For example, an important part of the CO's task in consultation appears to be the 'translation' of information expressed by the patient in lay terms into a handwritten form which is both professionally cogent and technically concise. He also 'translates' his diagnosis - which he has formulated and noted down in medical terminology/shorthand - into everyday language which his patient can understand. The code-switching element involved here, which is so often overlooked in considerations of language competence/performance, strikes us as occupying a position central to the doctor's linguistic resources.

7.4. Language functions

Language - reinforced, of course, by clinical examination - is the doctor's prime resource in the structuring of the consultation. It would obviously be desirable, in a comprehensive study, to investigate language functions in both oral and written modes. Within the limitations of our research so far we have confined ourselves to language functions involving oral skills on the part of the doctor (cf. 7.3. above). We would aim later to extend the study to include written language.

Before setting out in detail our proposed speech FUNCTIONS, we outline the typical operational structuring of the consultation. A more detailed consideration of the phasing/cycling of the speech FUNCTIONS within the consultation structure is intended in our forthcoming discourse analysis project (see 1.11 above).

7.4.1. Structure of the Casualty consultation

The Casualty consultation* could be seen as four consecutive phases bounded by greeting and leavetaking routines. The doctor starts the consultation with some greeting formula (which may be verbal and/or kinesic). In the first strictly clinical phase the doctor usually questions the patient generally to get a broad description of the complaint. This phase may be accompanied by the writing of clinical notes. The next phase consists of the doctor alternately or simultaneously examining and questioning the patient with reference to the complaint. As a result, the doctor usually arrives at a diagnosis, and this third phase is normally completed by the communication of the diagnosis to the patient. The last phase before the leavetaking involves the administration and/or prescription of treatment judged appropriate to the patient's condition, often accompanied by information and instructions for the future. The consultation is closed by some indication (again verbal and/or kinesic) of leavetaking.

Each phase of the consultation depends on satisfactory completion of the preceding phase. Within the interaction as a whole, then, are a set of sub-interactions. The clinical focus of each such sub-interaction is served by (and reflected in) several very specific speech functions as seen in the FUNCTIONS below. (The extent to which these FUNCTIONS co-occur, cluster, and follow predictable serial orderings

* i.e. in a cubicle (see 5.A) above). Generally, the more serious the case, the less structured, from a sociolinguistic point-of-view, the doctor-patient interaction will be. There may be very little communication between the doctor and stretcher patients (see 5.B above).

is investigated in the forthcoming discourse analysis project mentioned in 1.11 above)

In an important sense the sociolinguistic framework of the CO-patient consultation is tightly-structured, and approached with complementary sets of high 'expectancies' on the part of the two indispensable participants (CO and patient):

- a) The *raison d'être* of the interaction is not in question (leaving aside consideration of the rôle-within-a-rôle of the malingerer 'imposter' patient who only seeks a sick note).
- b) The mutual expectancies of the interaction, too, are defined a priori: one participant expects the other to deal with a non-normal bodily condition, and the other expects that, in principle, he will be able to do so.
- c) Neither participant expects more of the interaction/transaction than mutual attention to the clinical matter in hand (psychological reassurance here being regarded as a component of the clinical treatment).
- d) The patient's confidence in the doctor's competence is not in doubt. The (ambulatory) patient has made the decision to come to Casualty - sometimes in preference to consulting a GP - and knows he has no choice of CO. He may wait up to an hour in Casualty before being seen by the CO.
- e) The patient expects the doctor to manage the consultation. In every consultation we observed the patient took a passive-responsive part, only initiating, occasionally, requests for information when in doubt about the diagnosis, prognosis or instructions offered.

What the CO has to do, and what the patient expects him to do is clear and agreed upon. The objective of the consultation is attained by the CO's management of available communicative resources: efficient communicative management is necessary so that

- a) the clinical task of diagnosis and treatment (including reassurance) can be effectively performed;
- b) the clinical task can at the same time be efficiently performed without delays which may have clinical consequences as well as slowing down the patient throughput.

2. The field method of recording language functions

An approach to the isolation of language functions in a particular closely circumscribed communicative setting can vary between, broadly speaking, the inductive and the deductive. Our experience was of a mixed method employing alternating deductive and inductive approaches rather in the manner of the 'scientific' hypothesize-test-revise method.

We first observed a number of consultations so that we should have some experience on the basis of which to posit a set of tentative gross language functions. It was necessary to observe: what kind of activity took place in the setting; the variety and repetitiveness of particular activities; the broad stages in the consultation when language was involved; the range, variety and relative frequencies of different illocutionary events. We then specified a set of language functions which, we believed, regularly occurred in the consultation.

Checklist

This set of language functions (FS1) we then turned into a checklist for use in further observations. If, during an observation of a consultation a function of FS1 was judged to occur, a tick was entered against that function. FS1 was thus tested and refined, becoming FS2. FS2 later became FS3, and so on up to the present taxonomy.

The nature of the many revisions made in the taxonomy of language functions could be summarily characterized as follows:

1. finer resolution of one FUNCTION into two or more FUNCTIONS: INTERROGATE was thus arrived at as different from QUESTION, where previously the two had been lumped together under one label;
2. collapse of two over-differentiating FUNCTIONS into one: GREET incorporates an earlier additional FUNCTION PHATIC, which was found for purposes of the analysis to be not practically distinct;
3. addition of a new FUNCTION to handle utterances not satisfactorily characterized by any of the current set FSx; most of the metacommunicative FUNCTIONS such as REPEAT, RESTATE, FEED - ME - BACK, etc., were later additions of this sort;
4. deletion of FUNCTIONS posited but not during the testing found to be necessary or actual: a posited FUNCTION MAINTAIN was deleted on the grounds that there is no 'communicative maintaining' such that it cannot readily be analysed as MAKESURE, TALK, REASSURE, ACCEPT, GO-ON, or FEED-ME-BACK.

Tramlines

We had approached the real-time recording of language functions with doubts about its viability. We have, however, proved to our satisfaction that such real time analysis can under certain conditions be done; furthermore, we have improved the technique by making it capable of recording more information.

From our experience we would suggest that the following conditions need to be met for analysis of the sort in question to be satisfactory:

- i) the setting must limit the structure of the transaction/interaction, so that language functions are relatively few in number and quite predictable;
- ii) a preliminary hypothetical set of FUNCTIONS should be tested and subjected to continuous revision (in the refining-expanding direction);
- iii) analysts need training. This would ideally take the form of guided practice with interactions which are on video/audio tape (and can therefore be replayed), or are for one reason or another slow in terms of FUNCTIONS - per-minute rate. In our own experience it was much easier at the beginning to record foreign doctors who have such a relatively slow rate.

Our improvement in the recording notation came when we felt we had produced a reasonably good FS, likely to need only minor revisions, and now required information to relate the occurrences of language functions to the participants and to some putative clustering and sequencing within the transactional/discoursal framework. We devised a 'tramline' notation which records

- i) the operator/initiator of each FUNCTION recorded;
- ii) the addressee of each FUNCTION recorded;
- iii) the sequence of each FUNCTION recorded.

The following example of this notation is explained:

D→P	ABSCDEN	NP	VKGPJR	3
D→N		K	K	
N→P		O		

Here the top line records FUNCTIONS directed by the doctor at the patient, the middle line those directed by the doctor at the nurse, and the lower line those directed by the nurse at the patient. This is some reflection of the dominance/

- D QUESTION: (to get information during examination):
D: 'Does this hurt?';
D: 'Can you bend it?' etc.
- E MAKESURE: (to make sure that what Dr. understands is what P meant):
D: 'Does it hurt here?'
P: 'No, not really.'
D: 'It doesn't hurt?'
P: 'No.'
- F EXTEND: (to test a deduction made from P's information):
D: 'Can you walk all right?'
P: 'Yes'
D: 'So it doesn't hurt to put your weight on it?'
P: 'No.'
- G ACTION-INFORM (to let the patient know what is being done/going to be done):
D: 'I'm going to put in a couple of stitches.'
D: 'I think we'd better have an X-ray, to make sure ...' etc.
- H DIAG-INFORM: (to let the patient know the diagnosis):
D: 'You haven't broken anything' etc.
- I PROG-INFORM: (to let the patient know how the condition is likely to progress):
D: 'It should heal up quite quickly.' etc.
- J TREAT-DIRECT: (to tell the patient what to do to help the cure):
D: 'Take plenty of rest.' etc.
- K DIRECT (to tell the patient what to do so that medical attention can effectively be given):
D: 'Can you just lie down a moment.'
D: 'Take this with you to X-ray.'
D: 'Come back in five days.' etc.

- L APOLOGY: (to apologize for hurting patient or otherwise inconveniencing):
D: 'Sorry! Did that hurt?' etc.
- M TALK (to give information not strictly relevant to the consultation in hand):
D: 'I've seen rather a lot of these lately.'
D: 'Little girls tend to do that sort of thing.'
- N MED-ASK (to get information relevant to clinical aspects of consultation):
D: 'Are you allergic to penicillin?'
D: 'Have you been vaccinated against tetanus?' etc.
- O ADMIN-ASK (to get information not relevant to clinical aspects of consultation):
D: 'Do you use this hand in your work?'
D: 'Did you come here on foot?' etc.
- P REASSURE: (to reassure patient):
D: 'Nothing serious here.'
D: 'Don't worry, it's all right.' etc.
- Q ACCEPT: (to acknowledge receipt of communication):
D: '....Yes....'
P: 'I sort of twisted it round you know like'
D: 'Twisted it. 'I see.'
- R LEAVETAKE: (to end the consultation):
D: 'Right, thank you Mrs. Jones.'
D: 'OK? Thank you.'
D: 'Good. See you after the X-ray then'
- S GO-ON: (to encourage patient to continue the story):
P: 'Well, I was playing football, ...'
D: 'Mmm....'
P: 'And'

- T ANSWER:** (to reply to query raised by patient/nurse):
- P: 'Does that mean it's broken?'
- D: 'Yes, I'm afraid it's broken just here.'
- N: 'Shall I do an elastic bandage Doctor?'
- D: 'Yes I think that's all it needs.'
- U REPEAT:** (to get the patient/nurse/addressee to repeat what he/she said):
- D: 'What?'
- D: 'Sorry?' etc.
- V RESTATE** (repeating what was said because the patient didn't catch it):
- D: 'Can you swallow all right?'
- P: 'Can I?'
- D: '.... Swallow all right.'
- W FEED-ME-BACK:** (to check that the patient/nurse/addressee has understood/ is listening):
- D: 'Do you follow me?'
- D: 'OK?'
- D: 'Is that all right?' etc.

It will be seen that the above FUNCTIONS (which are here randomly listed) are basically of two kinds: i) task-oriented; ii) meta-communicative. This distinction is examined further in our discourse project (see 1.11) above).

Two points should be made following from the above enumeration of speech FUNCTIONS. Firstly, as has been noted elsewhere, it would be rash to think always in terms of a one-to-one correspondence between utterance and speech function. In terms of our taxonomy, an utterance could fulfil both a TALK function and a REASSURE function (as when the doctor asks the boy patient which football team he supports). Similarly ACTION-INFORM often serves both to tell the patient what is going to be done to him/her and to inspire confidence. (particularly through intonation)

Secondly, there are types of utterance which have an as it were bifurcating illocutionary forces. Thus the doctor may 'We'll just put a couple of stitches in.', simultaneously realising an ACTION-INFORM to the patient and a DIRECT to the nurse (who takes the utterance as an instruction to bring a suture-set). (In connection with this bifurcation, it is worth noting that channels may be simultaneously exploited

by the doctor to carry messages to different people: this often occurs with child patients, when the doctor may communicate verbally with the parent while transmitting non-verbal 'reassure' messages to the child.)

Mention must be made of subjective/attitudinal factors in the consultation situation. While we recognise the importance to a study of language use of these factors, we have been unable in the limited time at our disposal to attempt any measurements. Nevertheless, the tightly-structured quality of the interaction suggests that questions of role and status are clearly defined for all participants, and in any further study we would wish to use questionnaires and other socio-psychological techniques to help in confirming/modifying/developing our initial impressions.

8. Concluding remarks

The present study has followed three avenues which in future research could be considered separately. A more detailed treatment, for example, would be possible of:

1. a study of communicative needs for the purpose of course design;
2. a sociolinguistic analysis of language communication with rigorous social and linguistic reference and commentary;
3. an investigation of methodological approaches to 1 and/or 2.

Nonetheless, we believe that the description as it stands will prove most of the necessary input to the decision-making stage of the preparation of an English language course, while also characterizing many of the types of materials needed in it.

DOCTOR SPEECH FUNCTIONS IN
CASUALTY CONSULTATIONS :
SOME QUANTIFIED CHARACTERISTICS
OF DISCOURSE IN A REGULATED
SETTING

ENGLISH LANGUAGE SKILLS FOR OVERSEAS DOCTORS AND MEDICAL STAFF

WORK IN PROGRESS : REPORT III (May 1974)

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1. Introduction

This paper is an experiment in discourse analysis, and forms part of an ongoing project towards the production of English Language learning materials for overseas doctors based on a functional analysis of language activities and demands. For details of the Project as a whole, see our preliminary working paper Proposals for Course Preparation and Programme (March 1973) and the subsequent Work in Progress : Reports I and II (April/May 1974)

The present work is intended to serve mainly pedagogical ends. It aims to provide information about language use to be drawn upon in the preparation of an English language course for overseas doctors working in Lancaster. It may also, however, suggest an approach to one aspect of the analysis of discourse in closely-structured settings.

We have studied a number of Casualty consultations to discover the incidence, distribution and tendencies towards serial ordering of doctor speech FUNCTIONS. We offer some commentary on our findings, and make some early interpretations of them in terms of their implications for teaching.

2. Speech FUNCTIONS

The following list of speech FUNCTIONS was used to make live, real-time analyses of one doctor's utterances during Casualty consultations.

(For details of how the list was arrived at, see 'Work in Progress : Reports I and especially II)

Doctors' Speech FUNCTIONS

- A GREET: 'Hullo', 'Good morning', 'Mrs Jones?' etc.
- B ELICIT: (to get broad description of accident with some circumstantial detail): 'Can you tell me what happened?' etc.
- C INTERROGATE: (to probe circumstances of trauma relevant to diagnosis....):
'Do you remember if your whole weight was on the foot?'
'Did it bend right back when you fell?'.... etc.
- D QUESTION: (to get information during examination):
'Does this hurt?', 'Can you bend it?' etc.
- E MAKESURE (to make sure that what Dr understnads is what P meant):
'Does it hurt here?'
- 'No, not really.'
'It doesn't hurt?'
- 'No.'
- F EXTEND: (to test a deduction made from P's information):
'Can you walk all right?'
- 'Yes'
'So it doesn't hurt to put your weight on it?'
- 'No.'
- G ACTION-INFORM (to let the patient know what is being done/going to be done):
'I'm going to put in a couple of stitches.'
'I think we'd better have an X ray, to make sure' etc.

- H DIAG-INFORM: (to let the patient know the diagnosis):
 'You haven't broken anything' etc.
- I PROG-INFORM: (to let the patient know how the condition is likely
 to progress):
 'It should heal up quite quickly.' etc.
- J TREAT-DIRECT: (to tell the patient what to do to help the cure):
 'Take plenty of rest.' etc.
- K DIRECT: (to tell the patient what to do so that medical attention
 can effectively be given):
 'Can you just lie down a moment'
 'Take this with you to X ray.'
 'Come back in five days.' etc.
- L APOLOGY: (to apologize for hurting patient or otherwise inconveniencing):
 'Sorry! Did that hurt?' etc.
- M TALK (to give information not strictly relevant to the consultation
 in hand):
 'I've seen rather a lot of these lately.'
 'Little girls tend to do that sort of thing.'
- N MED-ASK (to get information relevant to clinical aspects of
 consultation):
 'Are you allergic to penicillin?'
 'Have you been vaccinated against tetanus?' etc.
- O ADMIN-ASK: (to get information not relevant to clinical aspects of
 consultation):
 'Do you use this hand in your work?'
 'Did you come here on foot?' etc.
- P REASSURE: (to reassure patient):
 'Nothing serious here.'
 'Don't worry, it's all right.' etc.

- Q ACCEPT: (to acknowledge receipt of communication):
 ' Yes.....'
 'I sort of twisted it round....you know....like...'
 - 'Twisted it. 'I see'.
- R LEAVETAKE: (to end the consultation): 'Right, thank you Mrs Jones.'
 'OK? Thank you.'
 'Good. See you after the X ray then'
- S GO-ON: (to encourage patient to continue the story):
 'Well, I was playing football,...'
 - 'Mmm...'
 'And.....'
- T ANSWER: (to reply to query raised by patient/nurse):
 'Does that mean it's broken?'
 - 'Yes, I'm afraid it's broken just here.'
 'Shall I do an eleastic bandage Doctor?'
 - 'Yes I think that's all it needs.'
- U REPEAT: (to get the patient/nurse/addressee to repeat what he/she said):
 'What?'
 'Sorry?' etc
- V RESTATE: (repeating what was said because the patient didn't catch it):
 'Can you swallow all right?'
 - 'Can I.....?'
 '..... Swallow all right.'
- W FEED-ME-BACK: (to check that the patient/nurse/addressee has understood/
 is listening):
 'Do you follow me?'
 'OK?'
 'Is that all right?' etc.

3. Doctor FUNCTIONS per consultation

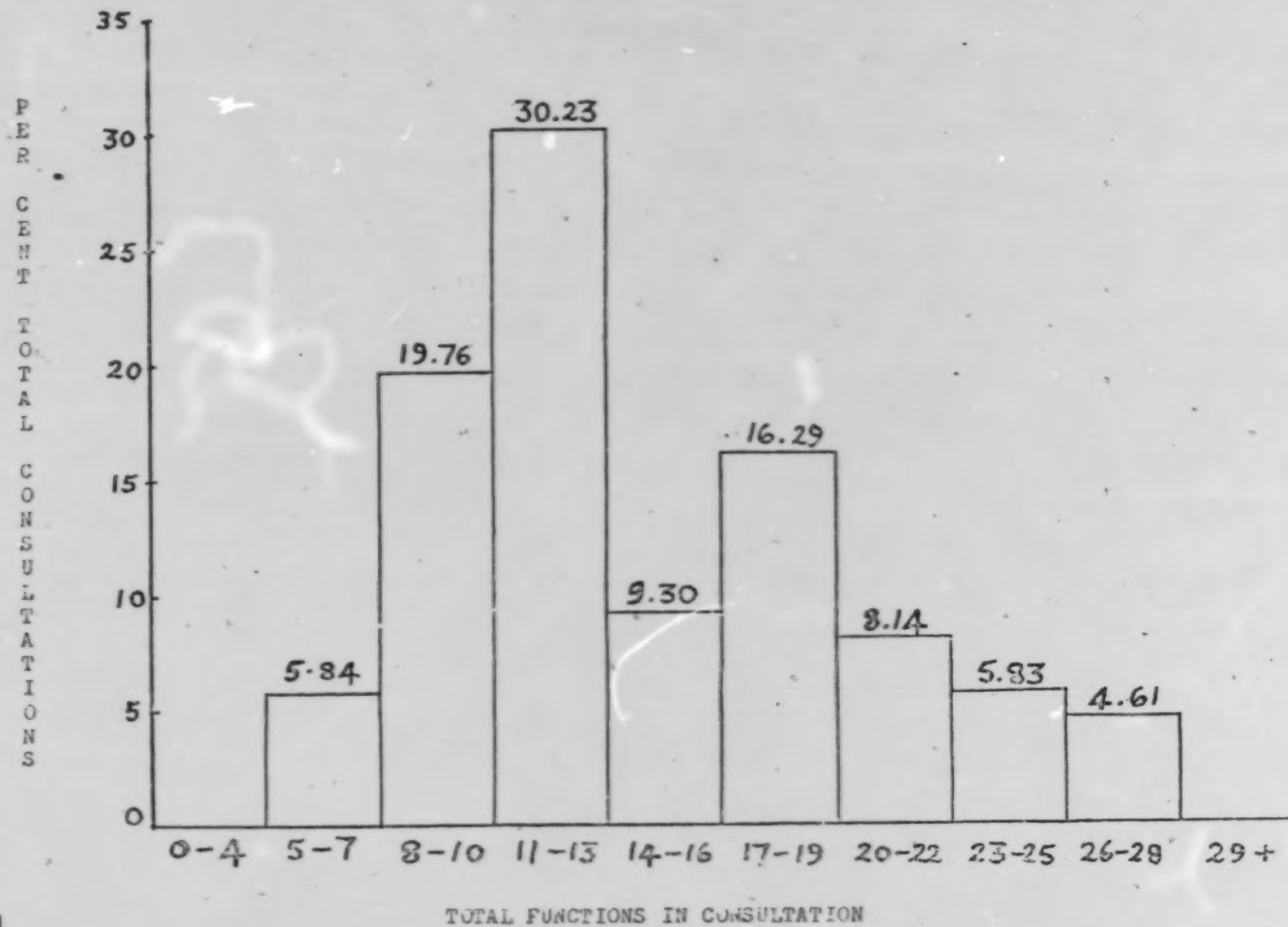
To arrive at the approximate numbers of doctor FUNCTIONS per consultation we used a sample of 87 consultations conducted by the same doctor. These 87 included 37 consultations observed at random over a three-week period, and a body of 50 consultation observed on 9 May 1974. All were conducted in cubicles in the Casualty Department of the RLI by a native-speaking doctor. In following sections of this paper, we limit our analysis to the body of 50 consultations described above, because it was in our observation of these 50 consultations that we achieved the greatest measure of agreement and consistency in our FUNCTION classification of doctor utterances.

Figure 1 shows the distribution of consultations in terms of their total number of FUNCTIONS. From this histogram, it can be seen that in over 50% of consultations there were between eight and thirteen FUNCTIONS. There was a second concentration around the seventeen to nineteen FUNCTION - length. No consultations involved less than five doctor FUNCTIONS, and none involved more than twenty-eight.

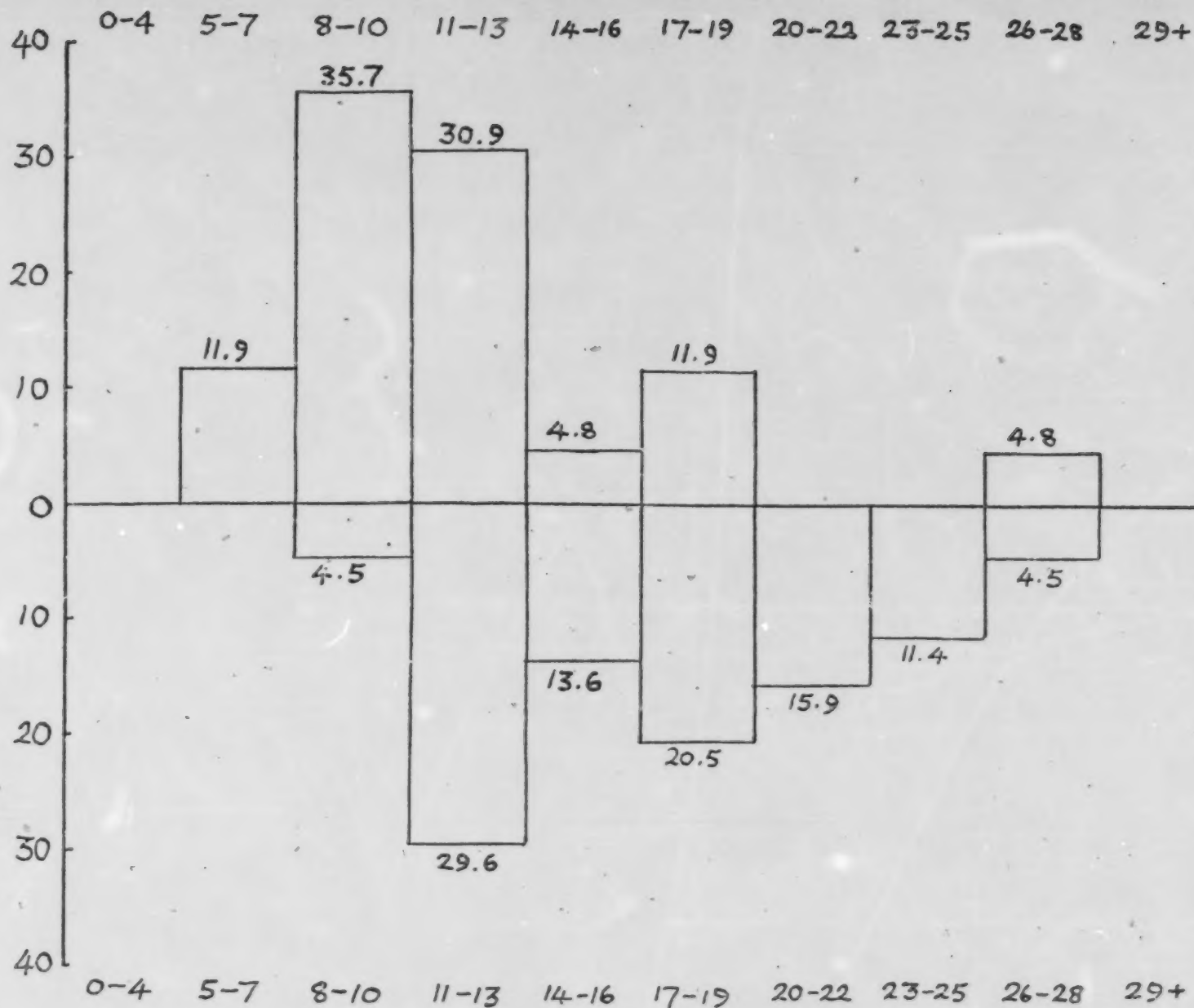
Breaking this distribution down in Figure 2, we compare consultations with old patients (i.e. who are on return visits) with consultations with new patients (i.e. who are attending Casualty for the first time). Of our sample of 87, 43 were old patients and 44 were new patients. Figure 2 shows that almost 70% of consultations involving old patients gave rise to 8 - 13 FUNCTIONS on the part of the doctor. Moreover, there were 11.9 consultations giving rise to 5 - 7 doctor FUNCTIONS. Comparing this with new patient consultations, it is striking that almost 50% of old patient consultations involved 5 - 10 doctor FUNCTIONS.

whereas there were no new patient consultations involving 5 - 7 FUNCTIONS, and only 4.5% involving 8 - 10. The tendency was for new patient consultations to be longer than old patient consultations; the greatest concentration was around the 11 - 13 FUNCTION length; a second clustering occurred in the 17 - 19 length bracket, after which there was a linear falling-off. It is interesting to note that over 50% of new patient consultations involved more than 17 doctor FUNCTIONS, while fewer than 20% of old patient consultations extended to this length.

DOCTOR FUNCTIONS PER CONSULTATION



P
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TOTAL FUNCTIONS IN CONSULTATION

Figure 2

4. Distribution of FUNCTIONS

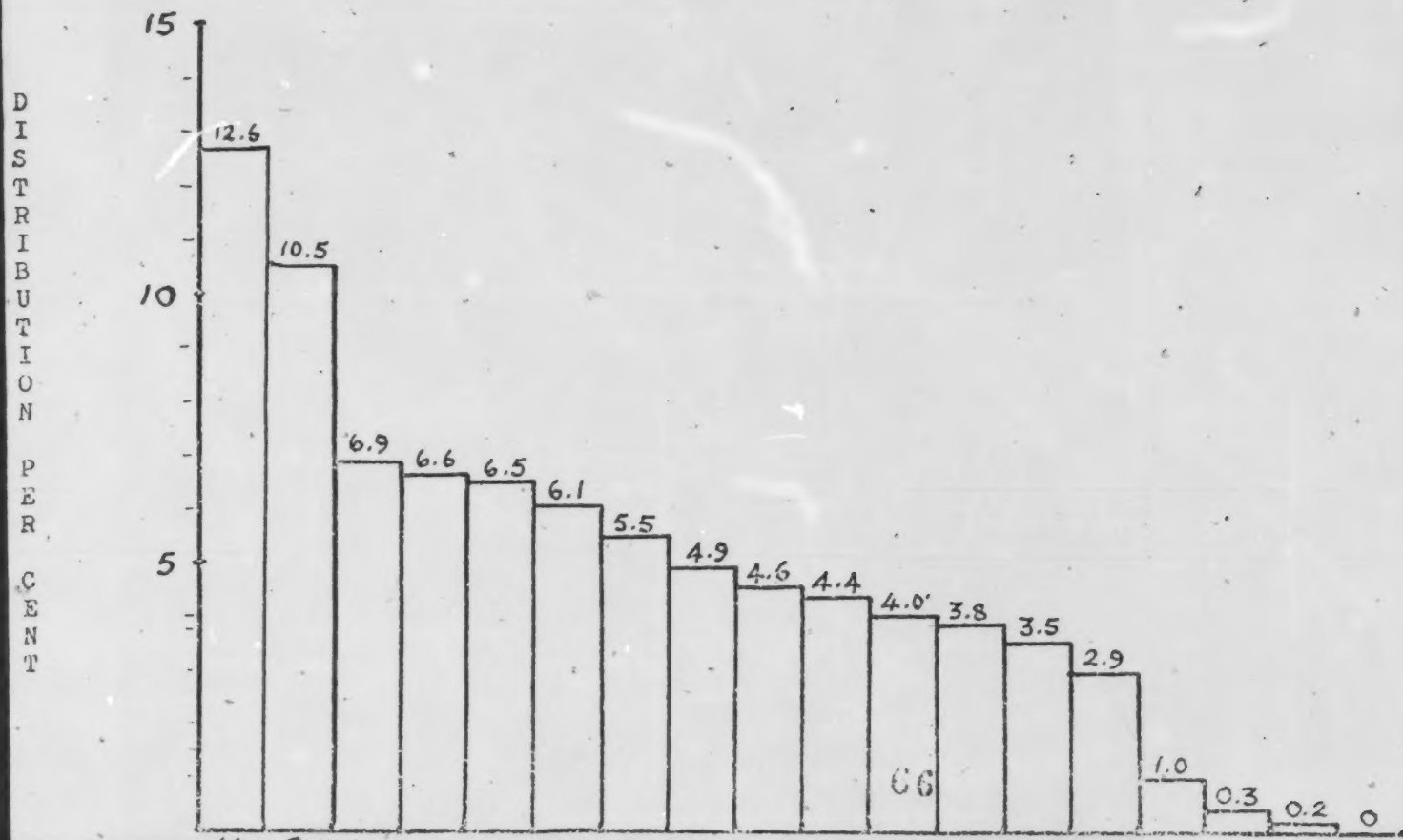
The distribution of the various FUNCTION in the body of 50 consultations is set out in Figures 3 and 4. The percentage distributions are based on the occurrences of the FUNCTIONS in a total of 677.

Some explanation is needed for the zero occurrence of FUNCTIONS V and W, and the relatively infrequent occurrences of U, F, S and L.

The set of FUNCTIONS was developed to handle both native and non-native doctors' utterances. We have observed that FUNCTIONS U, V and W occur in the consultation between non-native doctors and native patients or between native doctors and non-native patients. In our sample none of the patients was non-native. The FUNCTION S often has a kinesic realisation, and even when verbalized may be indistinct and/or ambiguous. The FUNCTION L, does not in our experience occur very often, while F may be a covert realisation of E, and so not susceptible of satisfactory real-time analysis.

The high occurrence of K is in a sense deceptive, because a large proportion of these K occurrences (about 25 - 30%) are explicitly directed at the nurse rather than the patient. The high occurrence of C is not surprising, although an a priori guess might have put D above it. An important finding for our purpose is that the three 'information-extracting' FUNCTIONS (B, C and D) account for almost 25% of the total.

DISTRIBUTION OF FUNCTIONS



DISTRIBUTION OF FUNCTIONS

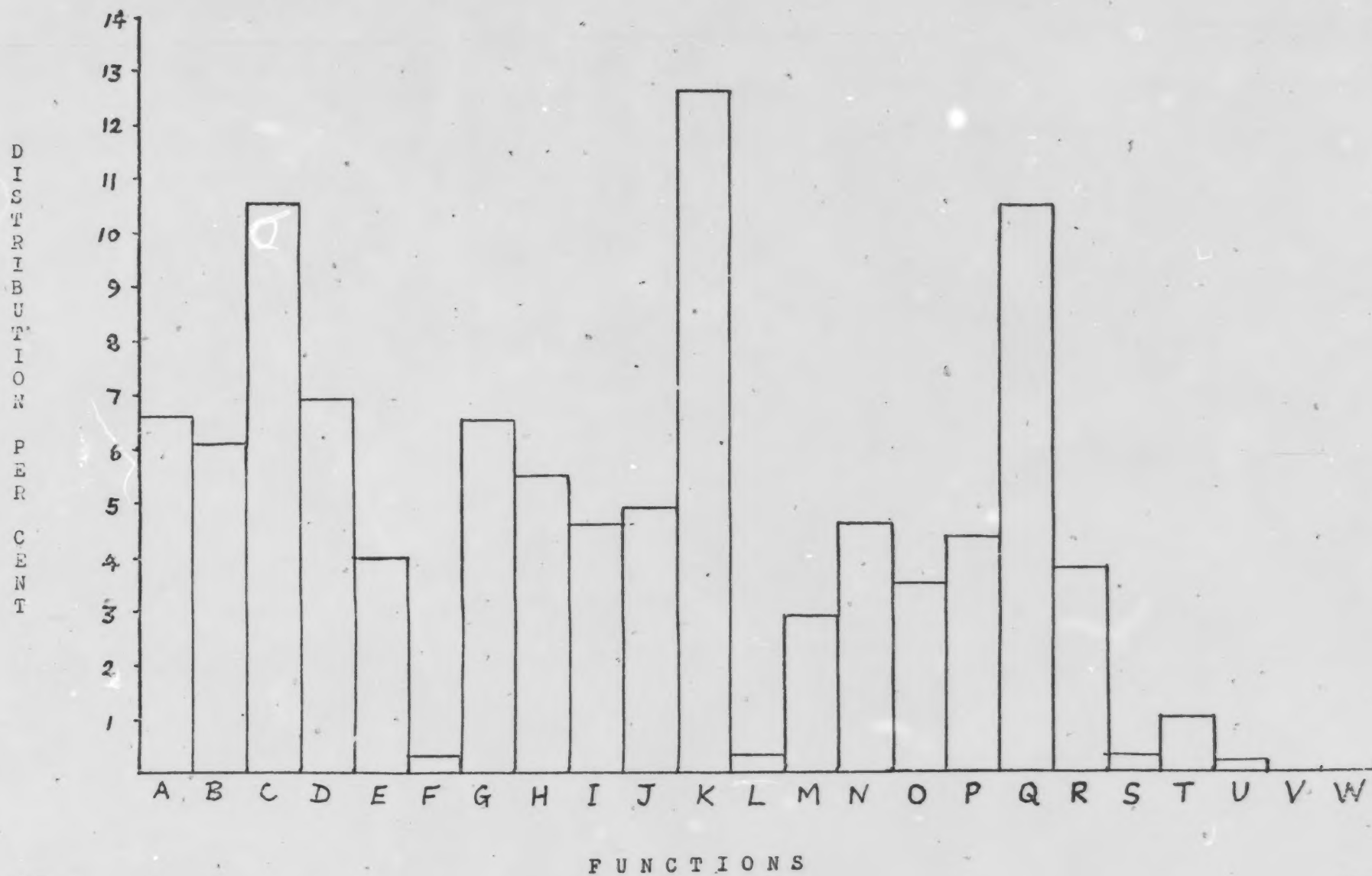


Figure 4

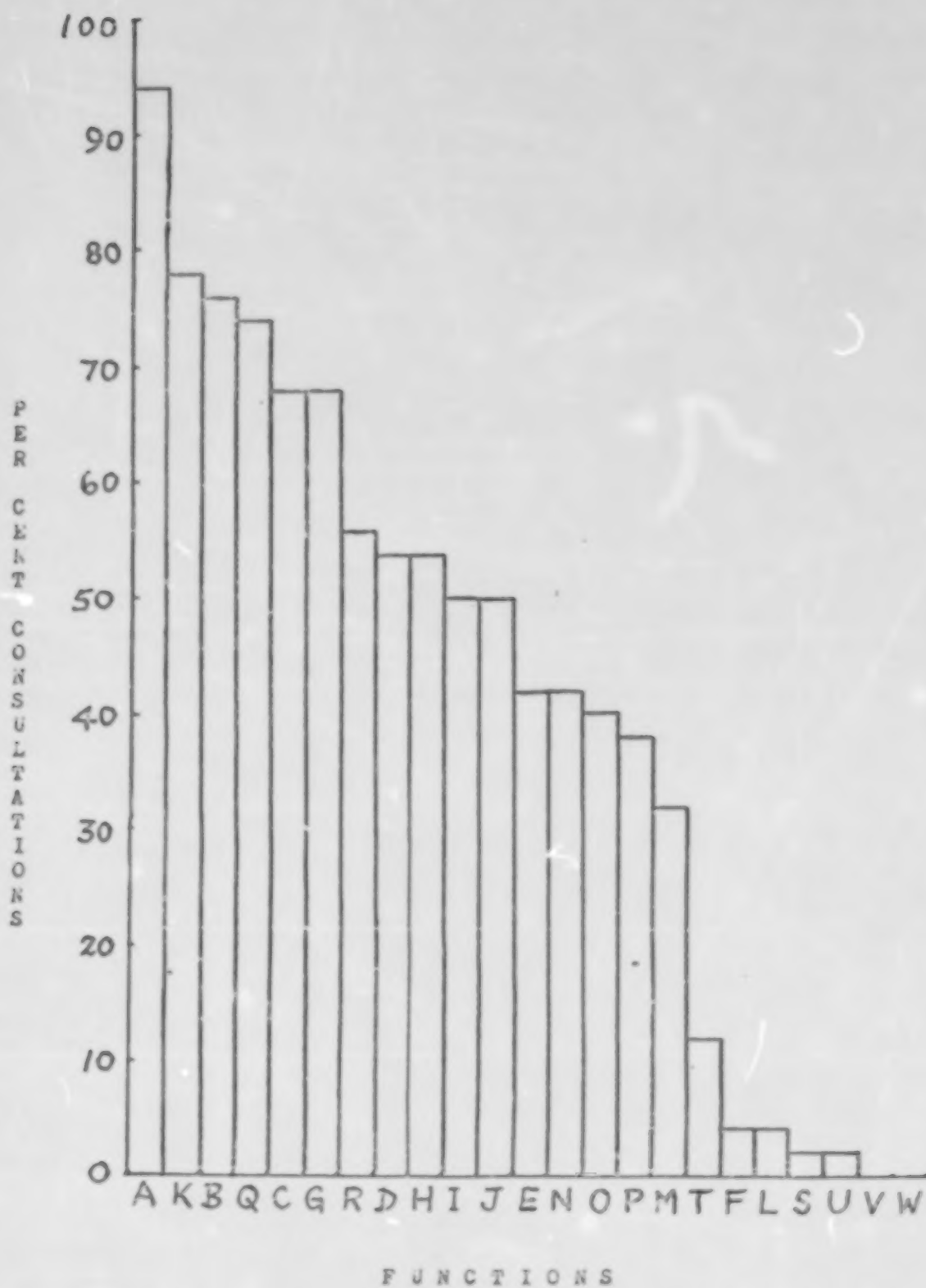
5. Occurrences of FUNCTIONS in consultations

Figure 5 shows the percentage of consultations in which each of the 23 FUNCTIONS occurs one or more times. Read in conjunction with Figures 3 and 4, it suggests some points of potential pedagogical relevance.

While A accounts for only 6.6% of all FUNCTIONS, it occurred in 94% of all consultations. Similarly, though less strikingly, R, although accounting for only 3.8% of all FUNCTIONS, occurred in 56% of all consultations. An interesting corollary to this is that while practically all consultations were initiated by A, far fewer were terminated in as marked a manner. The general information-extracting FUNCTION B, which accounts for a smaller percentage of the FUNCTION total than either C or D, occurred in a greater number of consultations.

The pattern seen above for R was not followed in the case of T, F, S, L, U, V and W -- which accounted for a small percentage of all FUNCTIONS, and occurred in a small number of consultations. This, we would imagine, is attributable to the native/non-native doctor distinction made in 4 above.

OCCURRENCES OF FUNCTIONS IN CONSULTATIONS



We decided to examine the incidence of FUNCTIONS in the consultation string together with their privileges of co-occurrence and serial ordering. To do this we decided on the basis of the Figure 1 histogram to concentrate our analysis on consultations involving up to 18 FUNCTIONS. This gave us a reduced corpus of 40. The matrices constituting Figures 6 and 7 tabulate the occurrence of each FUNCTION in each of the 18 possible positions in the consultation string, both in terms of numbers (Figure 6) and percentages (Figure 7).

It appears broadly that FUNCTIONS which are task-specific, such as B, C, D, G, H, I, J, K, tend to cluster (and thus reflect the operational phases of the consultation), while meta-communicative FUNCTIONS such as P, and Q are more evenly distributed in the string. It is no surprise that A only occurred in first position; the readings for R serve only to show the FUNCTION lengths of some consultations. (In fact not all consultations are terminated by R : see Figure 11 below).

With reference to B, C and D, which constitute the information-extracting FUNCTIONS, it can be seen from Figures 6 and 7 that they cluster around positions 2 - 9 (the doctor must have information before he can proceed to his diagnosis).

MATRIX OF FUNCTION INCIDENCE IN THE CONSULTATION STRING
(NUMBERS OF OCCURRENCES)

FUNCTIONS

	POSITION IN STRING																		Total No. of Error Functions	%
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
A	3							2											3	7.8
B	2	2						3											2	6.2
C		4	1	1				6											4	8.7
D		3	1	1				2											4	7.7
E			4	1				3											1	3.3
F		3		1				2											2	0.4
G				3				5											3	6.7
H			2	2				1											2	4.8
I		1	1	4				3											2	5.4
J				1				4											2	5.2
K				1				2											2	5.2
L		2	3	1				5											6	2.5
M			1	1				3											2	0.4
N				1				1											1	2.7
O				4															2	4.4
P					2			4											1	3.3
Q					2			2											2	5.2
R		5	3		1			2											2	5.2
S		2	1		6			3											5	10.0
T								5											2	4.6
U								1											2	1.2
V																			0	0.0
W																			0	0.0
X																			0	0.0
Y																			0	0.0
Z																			0	0.0
TOTALS	40	40	40	40	40	40	40	39	38	34	30	26	22	14	13	11	8	4	51	100

TOTALS PER POSITION

MATRIX OF FUNCTION INCIDENCE IN THE CONSULTATION STRING
(PERCENTAGES OF OCCURRENCES)

FUNCTION	POSITION IN STRING																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
A	9.5																	
B	5	60.0	2.5	2.5				5.0					4.5	7.0				
C		7.5	27.5	25.0	12.5	15.0	2.5	7.5	3.0	3.0	3.0		9.0	7.0				
D			10.0	22.5	15.0	12.5	7.5	15.5	11.0	3.0	3.5	4.0						
E		7.5		2.5	5.0	5.0	5.0		5.0	3.0		11.5	4.5					
F				2.5	2.5													
G		2.5	5.0	7.5	7.5	15.0	12.5	10.5	8.0	3.0	10.0	11.5	9.0		7.5		12.5	
H			2.5	10.0	5.0	2.5	7.5	7.5	8.0	6.0	16.5		7.0			9.0		
I			2.5	2.5	2.5	2.5	10.0	10.5	5.0	3.0	3.5	11.5	4.5	14.5		18.5		
J		5.0	7.5	2.5	20.0	12.5	17.5	13.0	21.0	29.0	16.5	4.0	4.5	14.5	38.0	36.0	25.0	
K			2.5											7.0				
L			2.5				2.5	7.5	5.0	3.0	3.5	16.0			7.5			
M			2.5	10.0	5.0	10.0			8.0	6.0	6.5		9.0	7.0	16.0			
N			2.5		5.0	5.0	5.0			6.0	10.0	7.5	9.0					25.0
O		12.5	7.5	5.0	2.5	5.0	5.0	7.5	5.0	6.0	3.5	7.5		7.0	7.5			
P		5.0	27.5	2.5	15.0	7.5	12.5	7.5	8.0	14.5	10.0	7.5	9.0	22.0	7.5	9.0	12.5	
Q							2.5		5.0	6.0	6.5	7.5	28.0		7.5	18.5	37.5	75.0
R						2.5		3.0			3.5		4.5			9.0	12.5	
TOTALS	40	40	40	40	40	40	40	39	38	34	30	26	22	14	13	11	8	5

TOTALS PER POSITION

7. Progressive FUNCTION possibilities

We now go on to consider the way in which the occurrence of one FUNCTION may determine the occurrence of another. Figure 8 shows the progressive co-selection of FUNCTIONS at the start of a consultation, while Figures 9, 10 and 11 illustrate similar phenomena elsewhere.

From Figure 8 it can be seen that the most probable beginning to a consultation was the sequence A B C. There was a .95 probability of A occurring in first position, a .60 probability of its being followed by B, and a .5 probability of B in turn being followed by C.

In more general terms, the first phase of a consultation appears to demand a greeting FUNCTION, then a general information-obtaining FUNCTION, after which the doctor usually seeks more specific information.

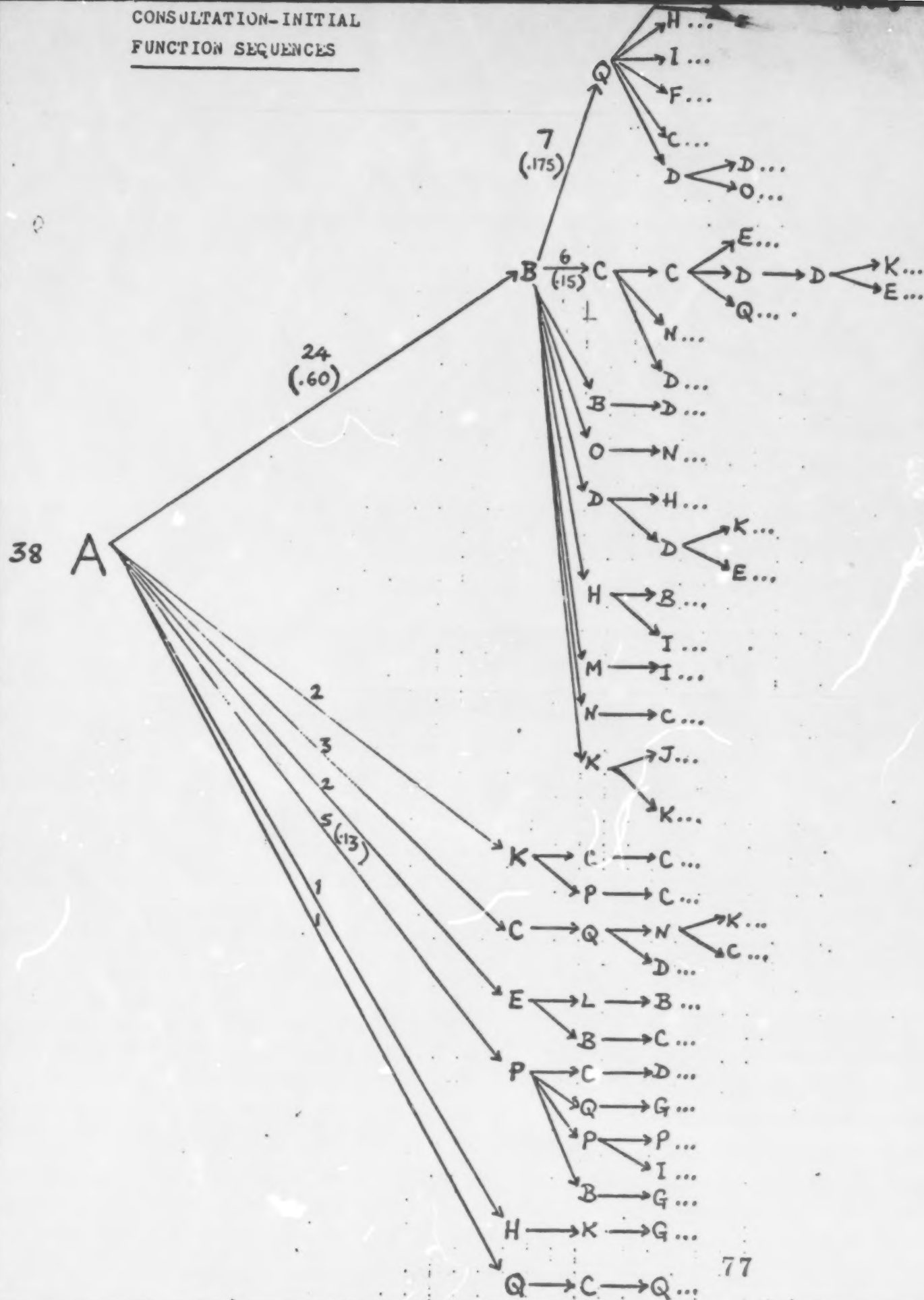
Interestingly, A was on five occasions followed by P. From our experience we would suggest two possible explanations. 1) The patient is a child; 2) The doctor receive some non-verbal message of anxiety. Once this reassurance had been given, the doctor proceeded to information-extracting.

It may seem strange for H to occur immediately after A. Perhaps here the complaint was obviously trivial; or perhaps the doctor was performing the double FUNCTION of reassuring through a provisional diagnosis.

We have not taken the paths of progressive co-selection any further,

as the probabilities of occurrence become increasingly insignificant.

CONSULTATION-INITIAL
FUNCTION SEQUENCES



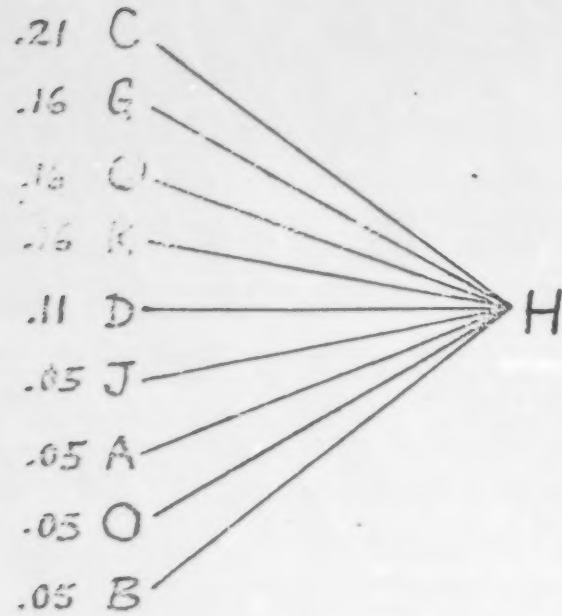
In Figures 9 and 10 we have taken two 'medial' FUNCTIONS, and analysed which FUNCTIONS they are preceded and followed by. In Figure 9, involving H (the doctor giving his diagnosis), the occurrence of H appears to mark the end of the information-extracting phase of the consultation. The greatest probability (.21) is that H will be preceded by C and followed by G (.26) or N (.26). In G the doctor tells the patient what he is going to do about the complaint, while N, comprising questions relevant to the proposed treatment, might also be expected to follow the diagnosis.

Figure 10 suggests that J is most often preceded by G: the doctor may tell the patient what the nurse is going to do and then what the patient himself should do to continue the therapy. It is interesting that this FUNCTION is often followed by leavetaking (R), bringing to an end the third operational phase of the consultation.

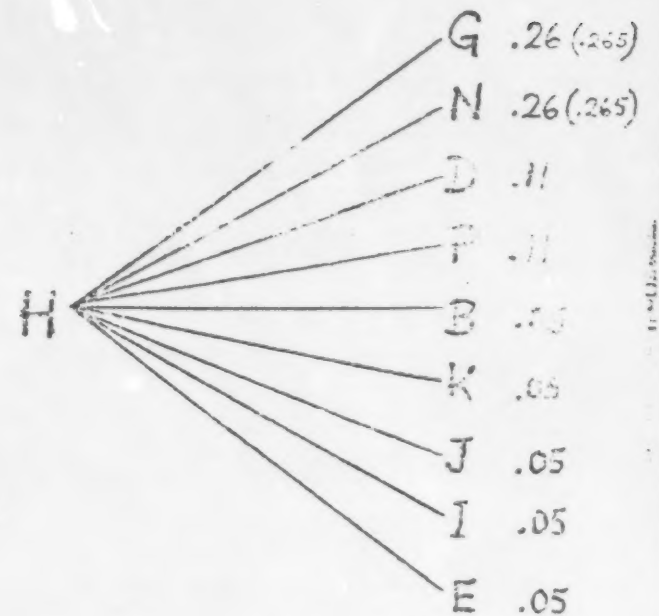
Figure 11 sets out the way FUNCTIONS terminate the consultations. 60% of consultations were terminated by some explicit leavetaking utterance. Apart from J (see above), R was most often preceded by K and P. K at this stage in the consultation often involved either sending the patient to be X-rayed or instructing him to come on a follow-up visit at a later date. The fact that P often occurred immediately before R might be evidence of the doctor's wish to leave the patient in a confident frame of mind. Consultations not terminated by R were often short or handed over to the nurse.

C.O - OCCURRENCE WITH FUNCTION H

FUNCTIONS preceding H:

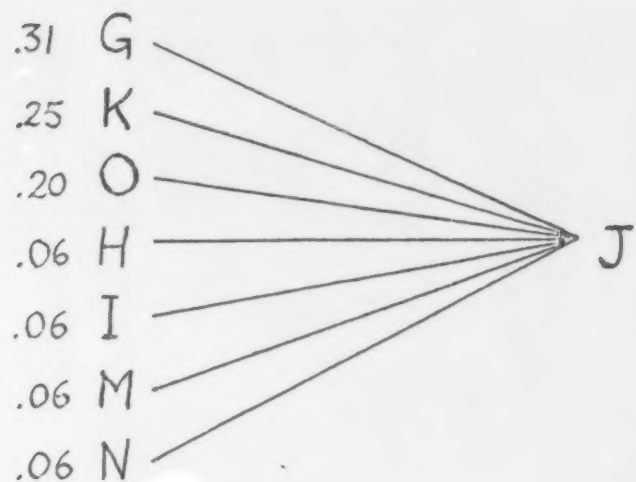


FUNCTIONS following H:

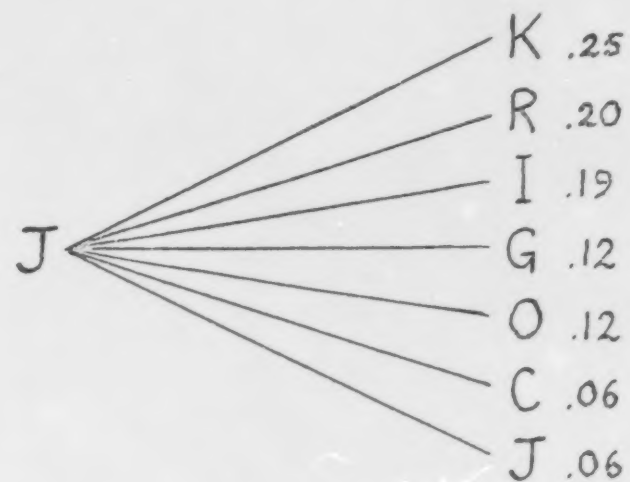


CO-OCCURRENCE WITH FUNCTION J

FUNCTIONS preceding J:

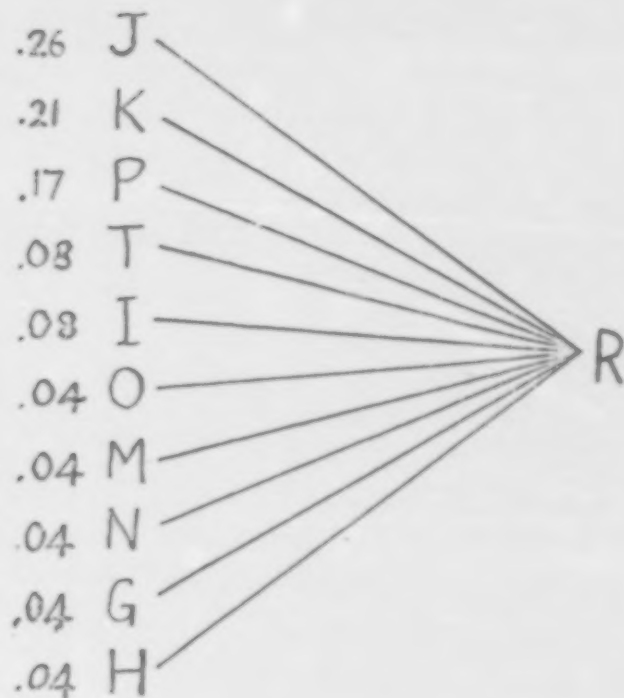


FUNCTIONS following J:



TERMINATION OF CONSULTATION

Consultations terminated
by FUNCTION R (60% of all
consultations):



Consultations terminated
by other FUNCTIONS (40% of
all consultations):

K	(.38)
P	(.19)
I	(.13)
M	(.06)
E	(.06)
O	(.06)
J	(.06)
Q	(.06)

8. Some Implications for Teaching

In the proposed pilot data-based English language course for overseas doctors in Lancaster, the design of teaching/learning materials could be influenced as follows.

1. The consultation as a unit. The average FUNCTION length of consultations could be a guide for the construction of learning units. The difference in FUNCTION length between consultations with old and new patients could also be reflected in the materials. (We have not here compared the distributions and occurrences of the FUNCTIONS between old and new patient consultations, although this might, we feel, be useful for further refinement.) The unfolding progression of the consultation in terms of the necessary coselection of FUNCTIONS may be good evidence for teaching the consultation language patterns as a unified sequence rather than presenting the learner with discrete phases (such as 'diagnosis phase', 'treatment phase').
2. Relative importance of FUNCTIONS. It appears that most consultations take place within a GREET-LEAVETAKE frame, and that GREET, at least, is an indispensable interview-opener. Moreover, the highly-structured opening sequence in which GREET leads to a general information-extracting FUNCTION, which in turn leads to a more specific information-extractor, can be usefully reproduced in learning materials. This most common sequence could be taught as a standard consultation opener, after which the learner's repertoire could be extended to cover other less common opening options. If it is necessary to treat the consultation as less than a whole, it might be possible to take the opening sequence and extend it in stages to parallel the learner's growing proficiency.

The high proportion of information-extracting FUNCTIONS (B, C, D) in all consultations suggests that the language communication skill of eliciting relevant information is an important one, and so deserves heavy weighting. The DIRECT FUNCTION K is often addressed to the nurse, and in our survey accounted for more than 90% of all nurse-addressed FUNCTIONS: in simulated doctor-patient-nurse interactions this can be taken into account.

The FUNCTIONS which occurred with low or zero frequency in the case of the native doctor (see 4 above) should probably receive rather greater emphasis in a course for non-natives because they enable the doctor to compensate for his lack of fluency by giving or getting a 'replay' of previous utterances.

Concluding remarks

So long as the doctor's utterances in the consultation are prompted by the patient's condition, his patterning of speech FUNCTIONS in any consultation will not be predictable beyond a certain degree. We have found significant probabilities in the opening, closing, diagnostic and treatment-prescribing stages of the consultation, and can thus with some confidence produce FUNCTION-centred simulated consultations for learning materials (the language exponents of the FUNCTIONS being selected on the basis of further empirical study).

Within the limitations of this short investigation it has not been possible to arrive at any statistically-based FUNCTION profile for the entire Casualty consultation, although we have made the first steps in that direction. Discourse in a highly-structured setting does appear to be amenable to quantitative analysis. In a more extensive investigation a much larger sample could be taken (including a number of doctors over different times of day and days of the week), and a programme might be written for machine processing of the data. A complete set of statistics of FUNCTION incidence and syntagmatic dependency relations might show that the consultation consists of several operational stages, each marked off by relatively high transitional probabilities, but each having within it more freely varying sequences.

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May 1974.

DOCTORS IN CASUALTY:

·APPLYING COMPONENTS OF COMMUNICATIVE COMPETENCE
TO SPECIALIST COURSE DESIGN.

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PREFACE

The English language course designer is often not fully conversant with the tasks and concomitant language demands of specialized learners. There has been a tendency for course designers to claim validity for their opinions and intuitions about language 'on-the-job'. But simple studies have shown that, for instance, bread is a 'given' in a baker's shops and therefore not much mentioned. Furthermore, as Wilkins has pointed out (1972), the armchair course designer will tend to concentrate on the 'reporting' function of language (reflecting his own, outside, 'representation'/'conceptualization' of the situational context), while it is clear that for the person on the job language fulfils many other functions.

It is now widely argued (Candlin (1973), Jupp & Hodlin (1974), Bung (1973a)) that task-specific language demands can and should be established by study of language in use on the job, and that pragmatically defined language functions constitute the soundest base for course design -- in fact, the indispensable base for a course aimed at developing 'communicative competence'. There are, certainly, a number of lexical items and formulae which may recur in job-specific language communication (for example hurt at the hospital, How do you like.....? in the restaurant), but fragmentary phrase-book elements of this sort equip no-one for unfolding dynamic language interaction. Only on the strength of a data base can we discover in quantitative terms the various cognitive and attitudinal language functions entailed in the efficient execution of job-specific tasks, and construct teaching/learning materials which are accordingly weighted. An attempt at such an on-the-job study of language demands was made in Work in Progress: Report II.

The ESP course may be designed for pre-or in-service use, and in either case there are good arguments for job/setting simulation in the teaching/learning units. At the pre-service stage, the language training may run parallel with the job training (and one 'setting' can thus be used for both). An in-service course will usually concentrate on language training alone, but can make good use of the job 'setting' as both contextual frame and psychological point of departure for course work.

INTRODUCTION

The seven modules in this report are not to be read as chapters in a developing argument or stages of a unified study. They deal with topics arising from Work in Progress: Reports I, II & III, and discuss in isolation some of the most interesting findings of the research up to date. Some implications for pedagogy are drawn out for incorporation in our forthcoming syllabus and materials.

We can here summarily outline the modules:

1. CYCLES The doctor's task 'cycles' at work are quite highly predictable; we suggest that some of the learning procedures should be modelled on these cycles -- thus maintaining a convincing degree of pedagogical and psychological 'contextuality'.
2. CHAINS Alongside and determined by the sequences of work cycles which characterize a doctor's spell of duty, are varying sequences/series of language skills and operational speech functions. The relative predictability of the serial ordering of these chains can be handled as a variable in teaching/learning materials.
3. VARIATION The doctor's language needs to vary according to (among other things) interlocutor. This entails selection along two principal dimensions which are quite largely correlated -- technical-lay, and cognitive-affective. Appropriate choice of language in these respects will be one of the main objectives for doctor-learners in the pilot course.
4. TASK-ORIENTED AND META-COMMUNICATIVE FUNCTIONS The Casualty doctor's speech FUNCTIONS might be graded in terms of both their indispensability to the work in hand and their value, from a pedagogical point of view, in learning materials. In the latter, the main criteria would be valency, task-centrality, and communication management.

5. MULTIPLE FUNCTIONS As one utterance may fulfil in different discoursal contexts a number of different speech functions, so one utterance in one discoursal context may realize two or more speech functions simultaneously. The problem of speech-function analysis is thus no less for the learner than for the linguist - though some system might be developed for the specification of such multiple function articulations.
6. NETWORKS The various communicative networks in which the doctor carries out his work cycles entail different roles in medical and communication management. Since the doctor as 'medical leader' may not always be the doctor as 'communication leader', and since there is generally a rather complex but predictable co-variation of task, role, setting and channel use, these networks must be considered in the course materials.
7. TRANSMEDIATION AND RECODING Of particular importance in the work of the Casualty doctor are the (largely correlated) skills of transmediation, i.e. the conversion from, say, speech to writing of the language medium in which a proposition is expressed, and recoding, i.e. the conversion from say, 'technical' to 'lay' of the code in which a proposition is expressed. Course work can include regular and graded exercises to develop this proficiency in 'switching' skills.

The implications overall are that a course should approach lexical, syntactic and phonetic variations in code from a speech function base. (Since doctors have constantly to assess the psycho-physiological effects they produce in their patients, and are trained to be sensitive to them, they should as language learners be quick to accept that apparently small differences in utterance realizations may have unintended effects on their

interlocutors. And since they are accustomed in their work to the necessity of operational cycles and task sequences in dealing with the patient throughput, they will most likely accept 'functional' approaches to language as the most efficient for their needs). The ways in which code realizations of speech functions can be varied and co-varied according to skills, cycles, chains and networks will be explored in greater detail in forthcoming work on a syllabus and materials.

WORK CYCLE AND STUDY CYCLE

An examination of the operational activities of the personnel concerned will show that in any job there are constants and variables. The work of a doctor in a Casualty setting (see Work in Progress Report II) involves a limited set of 'work cycles' within which there will be variation in detail. The doctor in Casualty has one cycle/routine when dealing with ambulatory patients, another for stretcher-borne cases. Within each such cycle a number of operational phases occur, which remain fairly constant. (In interviewing an ambulatory patient the doctor proceeds from information-gathering to diagnosing to prescribing) But within the phases themselves there is variation. The ESP course should aim to reflect this interplay of constants and variables in its simulations.

In our proposed pilot course for overseas doctors the study cycle could reflect the work cycle as follows. It appears from that the majority of consultations with ambulatory patients are of a fairly uniform length in terms of task-specific language functions. This uniformity can usefully be reflected in teaching units, as can the difference in mean function-length between consultations with old patients and consultations with new patients. Given that there are some consultations which are very much shorter or longer than the mean, it might be better in practice to delay the introduction of units simulating these until sufficient work had been done in the framework of the mean length.

Another aspect of the Casualty doctor's work cycle is the inexorable unstoppable quality of the patient throughput (this throughput is described Work in Progress: Report II). The patient input is beyond the control of the doctor, who is nevertheless required to handle the throughput as best he can. In the pilot course, it might be counter-productive to simulate this input-throughput relation from the start, but the aim for

later stages might be to develop in the learner the same balance in his language learning between careful decision and personal involvement on the one hand and the need for speed under pressure on the other, as is characteristic of the native doctor's throughput management. This pressure variable is more amenable to regulation in taught than in self-access materials, though in the latter timed programmes could be developed towards the same end.

Simulation raises certain questions of a more psychological nature, and it is hoped that the proposed pilot course will help to answer them. First, to what extent is the verisimilitude of the simulation likely to distract from, rather than contribute to, the language work in hand? It seems possible that in an in-service course familiar elements in the setting could interfere with the language learning by triggering off erroneous conditioned responses. Of course, it is valuable up to a point that such errors should be brought to light for remediation. At the same time any situation-related language habits developed during the course may equally be triggered and retrieved at appropriate moments on the job itself.

Second, to what extent can the provision of a context of situation which is familiar to the learner contribute to his learning efficiency? Although a first impression is that a learner 'on home ground' will feel more at ease, and so maintain a better psychological 'set', it is possible to imagine this working the other way. Thus the professional in the role of learner may be in danger of seeing in the simulation no more than a grotesque parody of his job. There may, then, be some argument for limiting the degree of verisimilitude to avoid this potentially unsettling effect.

A related point concerns the subjective expectations of the learner.

Most adults have a conception of the learning situation as involving a classroom, a blackboard, a book, and so on. It may be hard to convince them that other methods which are unfamiliar to them may be more productive.

Third, to what extent does the simulation activate in the learner the same work rhythms in the language tasks as characterize his performance in his 'real' job? This may depend on whether an individual's work rhythm is transferable; and whether any potential transfer is productive or not would depend on whether the cognitive demands on a man as language learner differ quantitatively and/or qualitatively from the demands upon him in his professional capacity.

Fourth, to what extent do the materials in a course of the 'simulation' type need to be, a) idealizations of typical language communication on the job; b) selected and/or edited chunks of real-time recordings, chosen and presented according to pedagogical criteria; c) selected but unedited chunks of real-time recordings; d) random unedited stretches of real-time recording presented without explicit pedagogical reasons? The four policies obviously fall on a cline which broadly reaches from the extreme inductive view of language learning taken by Newmark & Reibel (1968) to the deductive approach commonly adopted in general LT courses. Experiments in language learning (for example, Chastain & Moerdenhoff (1968), von Elak & Cekarason (1972)) have been unable to prove conclusively the greater effectiveness of one approach compared with another.

The proposed pilot course adopts the approach of presenting selected edited real-time recordings for making particular pedagogical points. As far as is possible, these language points will be fitted into the ongoing 'cycle'. The objective of the simulations, then, will be more 'artful model' than awkward 'mirror image'.

CHAINING

As operational cycles in the job can be reflected in the tailor-made language learning course, something similar can be done with job-specific sequences of language skills and functions. In carrying out the various phases of his task, the doctor makes use of different language skills in different serial patterns. At the same time his productive skills involve him in different language functions, and these, too, will be serially patterned. Thus, at the point in the Casualty consultation when the doctor is prescribing treatment, he is likely to speak and write and perhaps also listen, while informing, directing and perhaps also reassuring.

Both language skills and language functions may be more or less predictably entailed by the particular phases of the task in hand. The doctor always enters the consultation cycle by reading the patient's pre-notes, but may leave it either writing or speaking or employing non-verbal (paralinguistic) skills, or a combination of these. Within the consultation cycle the several phases may be associated with and entail the implementation of certain skills, though the extent to which a particular skill can be said to define and delimit a phase boundary is often problematic: according to the way in which each doctor-patient interaction is reified, the skill sequencing will vary in relation to the phases. The extent to which the serial ordering and syntagmatic dependency relations of task-oriented speech functions is predictable is investigated in Work in Progress: Report III. It was found that there are certain significant probabilities of the occurrence and co-occurrence of particular speech functions at phase-transitional points in the Casualty consultation. These patternings and interrelations of skills and functions can effectively be incorporated and simulated in the pilot course.

Since it was discovered in the field study that most consultations take place within a GREET - LEAVETAKE frame, and that GREET is an indispensable interview-opener, the pilot course should begin with a check, and if necessary a remediation of, the overseas doctors' proficiency in greeting. There was a .68 probability that the greeting would be followed by an information-extracting function on the doctor's part, which could be of the broad kind 'What happened to you, then?', or more specifically, 'Did you hit your head when you fell?' The implication for course design is clearly that questioning functions must be introduced early in the simulations. This communicative approach to course design is in marked contrast to the policies subscribed to in traditional grammar-translation, structural and pseudo-situational courses, which, for example, teach the 'interrogative' forms only after the 'affirmatives' have been dealt with -- without regard to the communicative functions performed.

Skill and function sequences of the sort described above may be continuous or discontinuous. In the normal course of events the consultation proceeds uninterrupted from one phase to the next, in one 'chain'. There is, however, the possibility that this chain may on occasion be broken. The doctor may be dealing with a patient in a cubicle (see Work in Progress: Report II p. 9f.) when he is called away on account of the arrival of a more serious stretcher-borne patient. It may be some time before he is able to resume the interrupted consultation. A more common interruption of the chain occurs when the doctor sends the patient for x-ray, and then completes a number of other consultation chains before he can take up again the chain of the interrupted consultation. In our materials, then, we shall have to

allow for such interruptions of the ongoing language skill and language function chains. Thus, in the teaching of a particular code point, the learner may be required to hold one chain in abeyance while others are initiated and completed before the eventual resolution of the suspended chain. Conversely, the language code learning points under study can be 'interrupted' and later resumed in the constant frame of the continuous, uninterrupted type of consultation chain. Load on the learner's short-term memory can thus in some measure be controlled -- although the patient's case notes (which would of course also figure in the simulated materials) may minimize this in information-processing terms (cf. Miller (1956), Ludwig (1968)).

Diagrammatically, the interruptions in the course materials of the ongoing language skill, language skill, language function and code learning point chains can be illustrated as follows:

Fig. 1.

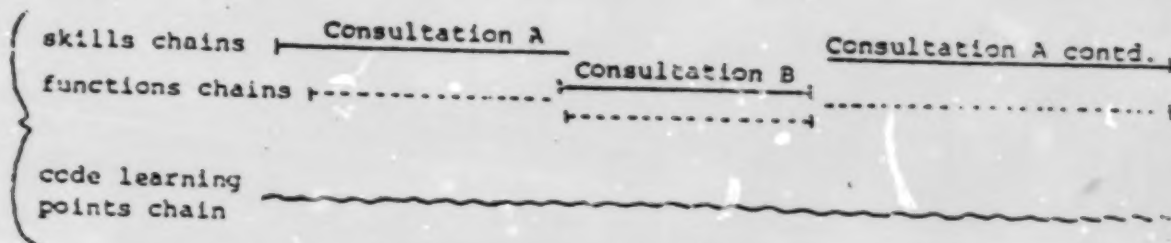
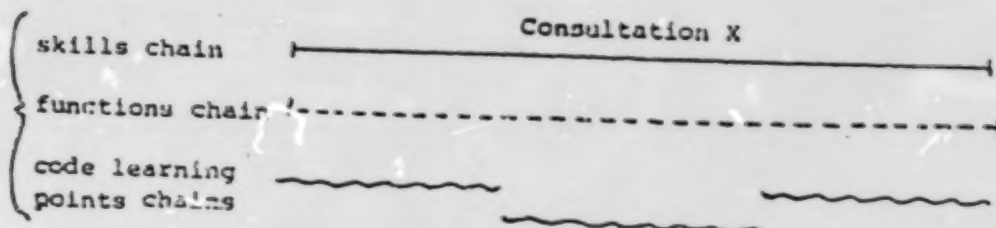


Fig. 2.

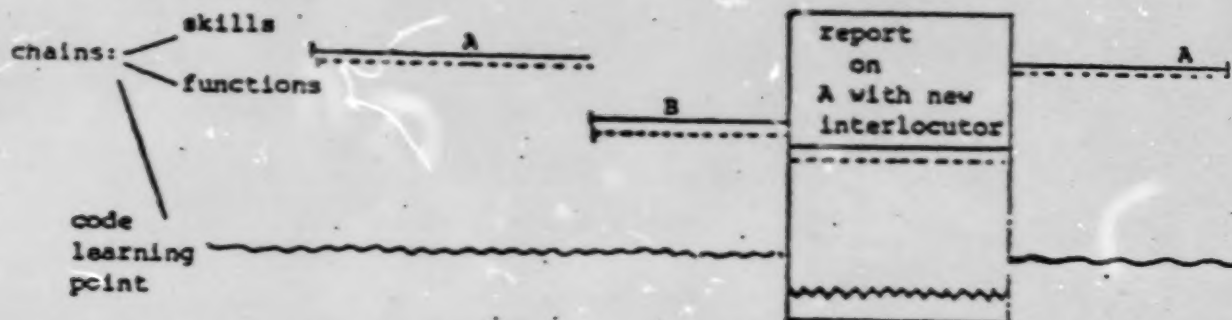


One inconvenience in such an approach might be that the work required in the Figure 1 pattern may last too long and therefore be difficult to manage in the pedagogical setting. To solve this problem, and turn a potential difficulty to pedagogical advantage, we could terminate one 'unit' at the end of consultation B, and introduce the next unit with

the interrupted consultation A. At this stage the student will be required to report on the interrupted consultation, as he might on the real job be required to brief a colleague/medical student, before taking it up again.

The pattern of two such co-ordinated units might, then, take the following shape:

Fig.3.



VARIATION

Characteristics of the Casualty doctor's language use will vary according to his interlocutor. (For a list of interlocutors see Work in Progress: Report II, p.16). The variation can be seen along sociolinguistic dimensions of status and role, but it is also, of course, determined by the relation of the interlocutor to the task. Thus, a doctor's language use reflects his dominant role when he addresses the patient, but his dominated role when he is with a senior clinician; and in an obvious sense the substance of the doctor's language will vary in focus and technicality between, say, his communication with a radiographer (focus: diagnosis; technicality: high) and with a patient's parent (focus: treatment/prognosis; technicality: low).

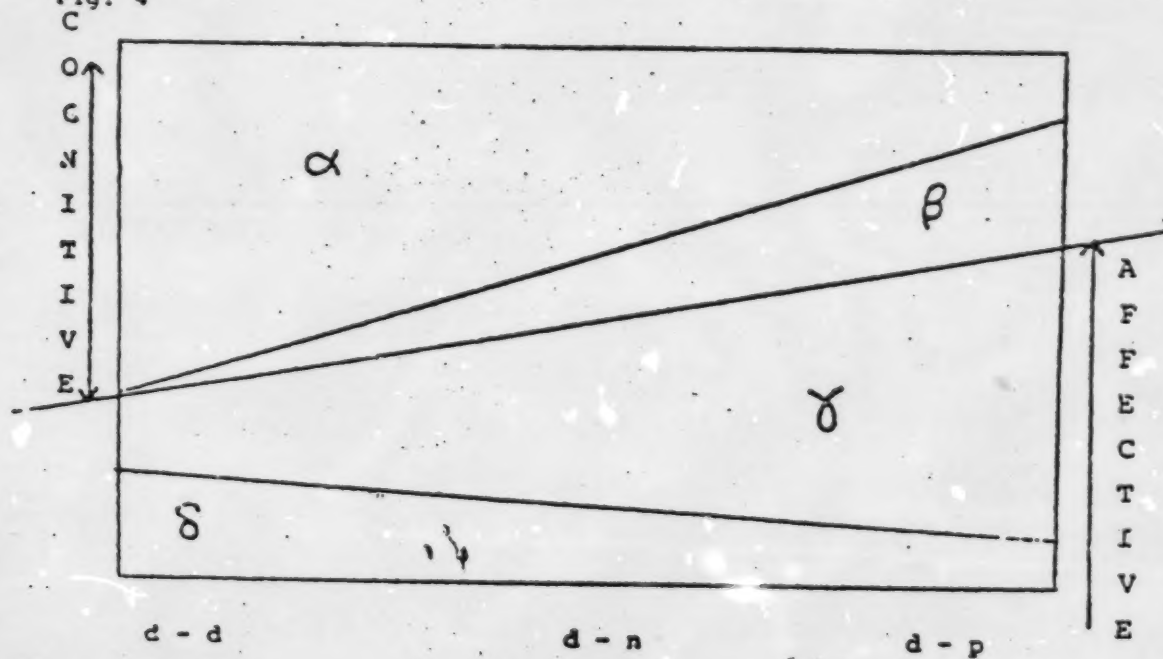
A third variation which arises in part from the variations according to status and role on the one hand, and focus and technicality on the other, is the extent to which the doctor's language reflects more cognitive or more affective functions. By cognitive functions we understand language use concerned with facts, information and the known outside world; by affective we mean language use concerned with feelings and relationships. (In connection with cognitive and affective variation for pragmatic communicative objectives, see Work in Progress: Report II, p. 21f.). Grossly distinguished, the cognitive function is evident when the doctor is talking to a colleague about medical matters, while the doctor's use of language to reassure his anxious patient is affective. But the division is somewhat artificial, as an utterance can rarely, if ever, be exclusively cognitive or affective.

The cognitive-affective variation, to constitute a parameter in the production of pilot materials, needs further refinement. Thus, although

a doctor may communicate the same cognitive content to both a colleague and a patient, the utterance realization will differ in terms of 'technicality'. Furthermore, while the affective function is a necessary and important component of the doctor-patient consultation, it is not indispensable to work-oriented communications among medical staff. Doctor-doctor affective functions may nevertheless reflect status, role, solidarity and so on.

The diagram below aims to illustrate this variation along the cognitive-affective dimension. It shows a cline ranging from doctor-doctor to doctor-patient communication. On this cline could be located (perhaps mid-way) the doctor-nurse characteristic, and other regular interlocutions with paraclinical staff (radiographer, mortician et al.). It should be noted, however, that variation along the cline will occur according to the individual. So, the doctor's communication with a sister is likely to differ from communication with a student-nurse in terms of both 'technicality' and solidarity. The same possibility of variation with a range on the cline may exist in all interlocutions.

Fig. 4



α: high-technicality cognitive realization

β: low-technicality, lay-oriented cognitive realization

γ: task-entailed, task-central affective realization

δ: task-peripheral affective realization

(d - d = doctor to doctor; d - n = doctor to nurse; d - p = doctor to patient)

Some exemplification is needed of this variation. The α-β variation is most evident in lexical pairings such as laceration (α) - cut (β); femur (α) - thigh-bone (β); it is also evident in combinations of lexical variation with abbreviation/expansion in, for example CVA (= cerebro-vascular accident) (α) - stroke (β). The γ - δ variation is seen in the contrast between, say, It's not painful, just a crunching sensation (γ) and Wouldn't mind a job like yours (δ).

An interesting area for investigation is the effect of where, in his communication, the doctor locates his nurse along the cline, on her perception of him as a) professionally competent; b) socio-culturally/linguistically competent.

In respect of the linguistic realizations of cognitive and affective functions, the pilot materials will need to take into account variation according to medium. A proportion of the doctor-doctor cognitive functions are mediated in writing, whereas doctor-patient cognitive (and affective) functions are limited to oral mediation. The doctor-nurse functions in the consultation are primarily cognitive, orally mediated -- though there may be some written follow-up (when, for example, the doctor tells the nurse what to give the patient and also gives her a written prescription). Moreover, doctor-doctor communications in writing normally exclude the primarily affective functions.

A further variation has to do with the reception by the doctor of messages from doctors, nurses and patients. Qualitative and quantitative differences are of the following kinds: The doctor's role in the task

in turn will be reflected in the kinds and lengths of the messages he receives. First, when he is 'leading' the interaction, most of the incoming messages will be responses to his initiations (although there will be occasions, in for example doctor-patient interactions, when the patient is the initiator). In cases where he is not 'leading' he may have less control over communication directed at him. Second, in doctor-doctor communication, the messages in both directions are likely to be cognitive, with relatively high technicality. The initiation-response length ratio is likely to be low. By comparison, in doctor-patient consultations the initiation-response length ratio might be quite highly biased in the doctor's favour (though this would be more noticeable in certain phases of the consultation than in others). Thus, during the 'general information extracting' phase which effectively begins the consultation, the doctor will ask the patient how the accident/injury occurred. The patient will embark on a reply, and the doctor may encourage him to continue by means of verbal/non-verbal realizations of the GO-ON. By contrast, when the doctor is making a physical examination, he often asks the patient 'closed' questions such as Does this hurt? - to which he wants only the briefest answer. The doctor-patient interview, then, may have a superficial resemblance to free conversation in this variation between initiation and response lengths, but is markedly different insofar as it is by convention controlled by one participant -- the doctor. (cf. Candlin (1972)).

Third, in consultations, the doctor's cognitive initiations will normally be responded to in a correspondingly cognitive feedback, while his affective initiations will often not demand a verbal response. If the normal initiation-response pattern is deviated from in either quality or quantity, the indications may be that communication has not been efficient or effective. At the same time it is possible to imagine that

a deliberate deviation by the doctor could result from a conscious decision on his part. Thus with a patient who pretends to some quasi-medical knowledge, the doctor may feel it necessary to put him down, and can to this end bring into play his d - d 'register' (see Fig. 4). (It would be interesting to discover what effect such deliberate 'register-inversion' would produce in doctor-doctor interactions).

The set of Casualty doctor speech FUNCTIONS empirically arrived at in Work in Progress: Report II was found to be broadly divisible into 'task-oriented' FUNCTIONS and 'meta-communicative' FUNCTIONS. By this we mean that certain FUNCTIONS characteristic of the doctor's consultation language performance are closely connected with the execution of particular operational tasks. One such task-oriented FUNCTION is C (INTERROGATE), where the doctor is probing the circumstances of the trauma relevant to the diagnosis (e.g. Do you remember the position you were in after you landed?). Certain other FUNCTIONS, however, involve the doctor in communication about communication (and are therefore termed 'meta-communicative'). These are concerned with checking, channel-clearing, message repetition, and feedback.

The task-oriented FUNCTIONS could be further classified along the cognitive-affective dimension. Thus, although H (DIAG-INFORM) is primarily cognitive, P (REASSURE) must be primarily affective - though both H and P are central to the task in hand.

An early investigation Work in Progress: Report III suggested that the highly-structured discourse of the Casualty consultation is amenable to quantitative analysis, and that there are some significant probabilities for the distributions of FUNCTIONS. It is clear from this study that a consultation tends to follow several operational 'phases' marked by relatively high probabilities of clustering and co-occurrence in the task-oriented FUNCTIONS. From this it can be concluded that, up to a point, the task-oriented FUNCTIONS are phase-specific, while the meta-communicative FUNCTIONS are freely distributable over the entire consultation. At the same time, task-oriented FUNCTIONS which are primarily cognitive (see above) will manifest a greater phase-specificity

than those which are more affective.

A more extensive statistical analysis would be needed to specify accurate valencies for the various FUNCTIONS. However, for the purposes of the pilot course, it seems reasonable to propose broad characteristics of valency as follows. If the consultation is seen in terms of four operational phases, namely, 'information', 'examination', 'diagnosis' and 'treatment/prognosis', the task-oriented cognitive FUNCTIONS will have throughout a lower valency than the task-oriented affective FUNCTIONS; the latter, in turn will have a lower valency than the metacommunicative FUNCTIONS. At the same time, valencies of the task-oriented affective and meta-communicative FUNCTIONS will be higher in mid-phase than near or at a phase-boundary. This general tendency in FUNCTION valency is set out in Figure 4 below.

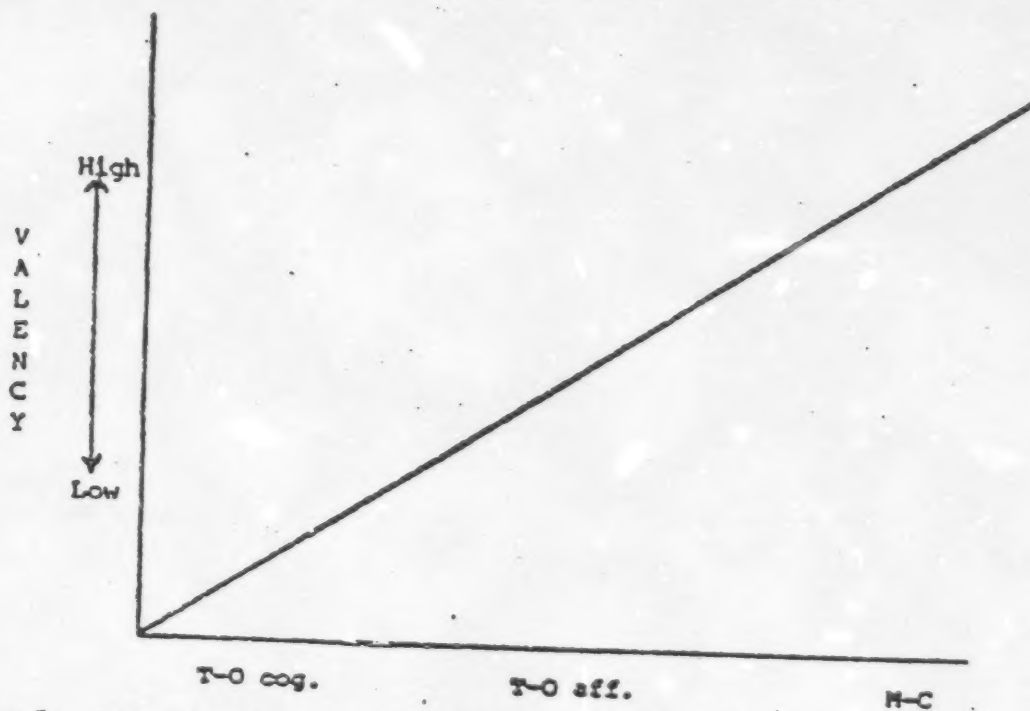


Figure 5: General valency characteristics of FUNCTIONS

T-O cog.: task-oriented cognitive FUNCTIONS

T-O aff.: task-oriented affective FUNCTIONS

M-C.: meta-communicative FUNCTION

It can be argued that where pedagogical decisions of item-selection have to be taken, the high-valency FUNCTIONS should be taught very early on. (The learner will then have at his disposal FUNCTIONS of high versatility/combinability - as, in code-learning terms, one criterion for selection is the 'coverage', the 'range of applicability' of a particular item). A repertoire of (high-valency) meta-communicative FUNCTIONS enables a learner to make the most of his tuition in that he can obtain 'playbacks', 'confirmations' and so on. This is also true in the consultation situation, where the non-native doctor can only get 'another bite at the cherry' through successful manipulation of the meta-communicative FUNCTIONS. Furthermore, even the native doctor appears to need the phatic potential of certain of the meta-communicative FUNCTIONS, to ensure the smooth progression of the consultation, as when, for instance, the doctor is preoccupied with the examination or the note-taking, but signals to the patient that he is still attending. It may be that the patient will form an impression of the non-native doctor's competence partly on the basis of his skill in managing the meta-communicative 'strand' in the ongoing consultation. A patient's impression after the consultation that he 'wasn't getting through to the doctor' might simply result from insufficient meta-communicative feedback on the part of the doctor. MacLay & Newman (1960) demonstrated that 'misunderstanding' by the listener was associated with an increase in the length of the speaker's messages. The non-native doctor will need to be sensitized to this, so that his mastery of meta-communicative FUNCTIONS will have the double value of (a) conveying an impression of understanding; (b) effectively curtailing the patient's message flow when it is irrelevant to his purpose.

Against the strategic advantages of teaching the high-valency FUNCTIONS first, must be set the fact that they are in one sense task-

independent. Thus, while it might be possible to conduct a consultation solely by means of task-oriented FUNCTIONS, the same cannot be said of the meta-communicative FUNCTIONS. In the simulated-consultation materials, then, certain indispensable task-oriented cognitive FUNCTIONS (linked to the operational phases described above) will be required as contextual framework within which the meta-communicative FUNCTIONS can be practised. (Of course, for the purpose of intensive drilling, any FUNCTION can be temporarily isolated; but in presentation and practice stages some contextual framework will be a *sine qua non*). It seems, then, that a policy of teaching all the high-valency FUNCTIONS first is not wholly justifiable, but that some balance must be achieved between high-valency and task-centrality. (Maximal task-centrality is exemplified in H, DIAG-INFORM, for instance, where the speech FUNCTION of itself constitutes the operational task).

A further point should be made in connection with the importance of the meta-communicative FUNCTIONS, which is related to what Slama-Cazacu has termed 'superfluous or noxious redundancy'. While, as was suggested above, the judicious exploitation of meta-communicative FUNCTIONS may contribute to consultation smoothness and patient satisfaction, an over-abundance is likely to slow down the patient through-put, so resulting in reduced efficiency. Further statistical analysis is needed to arrive at FUNCTION profiles of typical native doctor consultations, from which to determine ideal (and critical?) meta-communicative/task-oriented FUNCTION ratios. It would clearly be desirable to sensitize the non-native learner to the ratios which are optimal.

It should be possible, where in-service doctors are concerned, to make audio/video recordings of them in consultations, and use these recordings: (a) to draw FUNCTION-profiles of the learners which can be set against the 'ideal' profiles to pedagogical ends;

(b) To examine and illustrate (in class or individually) weaknesses and shortcomings in the learners' FUNCTION-'styles'. The predictability of the language realizations of the FUNCTIONS will depend in part on whether they are task-oriented or meta-communicative. (There will also, naturally, be idiolectal variation in FUNCTION exponents). Task-oriented FUNCTIONS are to some extent dictated by the nature of the patient's complaint, and their realizations therefore show wide variation: their predictability can only be approached in terms of the pathological circumstances. The meta-communicative FUNCTIONS, on the other hand, can -- though need not be -- realized in a small and limited set of language exponents. Thus, S (GO-ON) has a limited set of realizations, including 'Mm'; 'Yes'; 'Go on'; 'Really'. Q (ACCEPT) may be realized by a small set of exponents such as 'Yes'; 'I see'; 'Good'; 'Fine', but could at a more advanced level be realized by focussed repetition of the patient's utterance, as in:

'I sort of, well, twisted it round, like, you know ...'

'Twisted it ...'

As a corollary to the FUNCTION realization predictabilities, there is the possibility that meta-communicative FUNCTIONS, and occasionally the task-oriented affective FUNCTIONS, may be realized non-verbally. In this way, the S (GO-ON) FUNCTION mentioned above may be fulfilled by a nod, or the A (GREET) by a smile. The distribution of realizations along the verbal - non-verbal dimension would perhaps correspond (incidentally?) to the valencies of the FUNCTIONS in question. From the pedagogical point of view, however, it should be borne in mind that some non-verbal signals may, as exponents of particular FUNCTIONS, be more ambiguous than corresponding verbal exponents. And kinemes may, too, be cross-cultural ' faux-amis '. It would therefore be interesting to investigate the extent and manner in which kinemes in the

consultation can reinforce/modify/override the co-occurrent verbal message (cf. Argyle (1973), Ekman (1964), Schefflen (1972), Birdwhistell (1970).)

There is the further danger that learners with poor fluency may rely too heavily on non-verbal exponents. Difficult decisions have to be made, therefore, about the selection of FUNCTION exponents in the pilot materials.

MULTIPLE FUNCTIONS

It was with pedagogical ends in view that we drew up the list of doctor speech FUNCTIONS (Work in Progress: Report II p.32 f.) There are, however, considerable difficulties in a speech function approach to the analysis of discourse. These fall broadly within three areas:

- (i) the ultimately subjective decisions that have to be made by the analyst who is not a participant in the interaction;
- (ii) the lack of a one-to-one correspondence between utterance and function;
- (iii) the problem of knowing the way in which the 'givens' of the situational context, as perceived by the participants, determine their ongoing encoding-decoding behaviour in the interaction.

A participant in an interaction makes an utterance with more or less conscious pragmatic intent. The communicative fulfilment of this intent depends on the successful reception of the illocutionary force (cf. Austin 1962) of the utterance by the addressee(s). The real-time analyst aiming to code the functional value of the addressor's utterance faces two related difficulties: (i) he cannot completely know the addressor's communicative intent (though it may be more or less obvious from one case to another); (ii) he cannot completely know the cognitive/affective response activated in the addressee.

The analyst we suggest, may develop an orientation towards one or another of the participants, and this will affect his function-coding decisions. If the analyst for some reason is better acquainted with or tends to identify with the addressor, he is likely to code more in terms of intent than effect. Moreover, it is likely that in the real-time setting the analyst will be forced to make instantaneous decisions without the opportunity to assess the perceived illocutionary force as it is reflected in the addressee's response (verbal or non-verbal). In contrast,

the analyst who works from audio/video recordings is in a better position to 'read' an utterance's function for its combined intent and effect in the discursial progression.

It is possible, too, for two analysts to work on a two-participant interaction -- each trying to identify with, and code the speech FUNCTIONS of, one of the participants. In such a procedure, the need for mutual consistency between the two analysts is obvious.

In our own case (cf. Work in Progress: Reports II & III) we developed an orientation towards the doctor as participant in the doctor-patient consultation. In other words, we analysed the discourse in terms of the doctor's speech functions and their pragmatic purpose. This doctor-orientation was partly because we came to know the doctors personally, and were able to talk to them informally about their discursial performances. But it was primarily because of our pedagogical interest in specifying the repertoire of speech functions needed in their work.

It goes without saying that any set of speech function categories can only rather grossly account for the analysis of live discourse. There is bound to be a more or less arbitrary element (and even occasional disagreement between analysts) in the assignment of function labels to utterances. The analyst working with a function taxonomy may initially experience difficulties in characterizing utterances according to his function set: the relative ease with which he is later able to do this says nothing, of course, for the validity of his taxonomy -- but only reflects his growing consistency in its application.

The occasional arbitrary decisions entailed in speech function analysis result also from (ii) above - the lack of one-to-one utterance - function correspondence. The lack of utterance - function correspondence is in two directions: first, very obviously, one function can have many

line, and its realizations; second, any surface utterance may be capable of fulfilling simultaneously more than one function. Some implications of this 'multiple functioning' are now considered.

It seems helpful in speech function analysis to allow for the possibility that any utterance will have more than one 'layer' of (more or less conscious) functional intent, and that the layers of such multi-layered utterances will be, within the stream of discourse, variously prominent. We would suggest that the difficulty for the analyst in coding utterances according to function will vary in proportion with these prominence ratios. In our own real-time analysis we found it necessary to concentrate on identifying the 'primary' function of the utterance according to what we perceived as the more/most prominent layer. Our analytical speech FUNCTION taxonomy was arrived at on this basis. We needed a system that would enable us to label, in one immediate decision, the salient functional characteristic of the prominent layer. Given extensive opportunities for analysing discourse from audio/video recordings, it might be possible to devise a more delicate system of function coding which assigned to each utterance a set of values on several scales simultaneously (in the manner of a 'function differential', comparable as a device to Osgood's semantic differential).

Our speech FUNCTIONS could be grouped according to whether they are primarily task-oriented affective, or meta-communicative as follows:

Task-oriented cognitive: B, C, D, F, G, H, I, J, K, N, O, T;

Task-oriented affective: A, L, M (?), P, R;

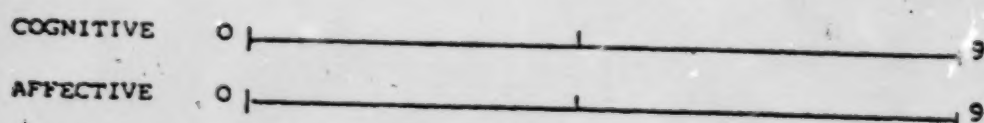
Meta-communicative: E, M (?), Q, S, U, V, W.

It appears, however, that FUNCTIONS which are primarily task-oriented cognitive may also fulfil in some secondary measure an affective function, and vice-versa. Between the task-oriented and the meta-communicative FUNCTIONS, on the other hand, there does not appear to be this possibility

of double articulation. In real terms, we observed that the Casualty doctor, when fulfilling a G (ACTION-INFORM), might incorporate within his utterance an affective layer of P (REASSURE). This double articulation was achieved most often through intonation (see below) through affective modality in the code (e.g. just in 'We'll just put a stitch in.'). or through a combination of linguistic (cognitive) and paralinguistic (affective) elements.

To handle the variation of cognitive and affective elements in task-oriented FUNCTIONS in future research, we might find it possible to work from recordings in the following way. First, decide the primary function of the utterance, i.e., A, G, etc. Next, assign values to the utterance on these cognitive and affective scales:

Fig. 6



Finally, code the utterance for primary function together with its relative cognitive and affective weighting indices. The result might then look like $\underline{G}^{5/3}$, $\underline{K}^{8/2}$, and so on.

An extensive analysis of this kind could provide sufficient data for arriving at mean values along these cognitive and affective scales for each FUNCTION. In eventual learning materials differentials of this type could be incorporated with something of the value of a meta-language for more advanced learners.

Related to the notion of multiple function articulation above is the other possibility that an utterance can have, as it were, more than one addressee. An example of such a multiple addressee articulation would be when the doctor addresses, say, a G (ACTION-INFORM) to his primary addressee, the patient, and this serves simultaneously as a K (DIRECT)

for a secondary addressee, namely, the nurse. Thus:

Doctor to patient: 'We're just going to put a stitch in.'

This utterance has the prime FUNCTION of informing the patient what is to be done (with concomitant cognitive and affective indices of, say, 8/5) while also directing the nurse to bring a suture set. In such an instance it is important that the patient should be the primary addressee, because the strangeness of the technical medical procedures needs to be offset by commentary with reassurance value on the part of the doctor. Native doctors, we suggest, manage this. A non-native doctor, on the other hand, might make the nurse his primary addressee:

Doctor to nurse: 'Could you bring me a suture set.'

-- which relegates the patient to the position of secondary addressee, and may unnecessarily alarm him. In terms of communicative competence, with particular reference to the doctor-patient interaction, there is a critical difference between saying to the patient, I think we'd better give you a little jab to be on the safe side, and saying to the nurse, Give this patient anti-tetanus, would you? It seems, therefore, that the learner should be sensitized to the effects of such multiple addressee articulations.

The multiple function articulation of an utterance may be consciously managed by the doctor over more than one channel. In the multiple addressee articulation described above, the same channel(s) conveyed different messages to different addressees. There are occasions, though, when different channels may be used. Thus, the doctor may use the verbal channel to transmit G (ACTION-INFORM) to a child-patient's parent, while simultaneously transmitting a P (REASSURE) over the suprasegmental and paralinguistic channels to the child himself. In this way, the doctor may say if I put in a little local anaesthetic, he won't feel a thing to

let the parent know what action he is going to take, while at the same time conveying to the child-patient a primarily reassuring message through intonation, an avuncular smile, and a cheery pat on the head. This third type of multiple FUNCTION articulation could find a place in the more advanced units of the learning materials.

COMMUNICATIVE NETWORKS

In the pilot materials simulations, it should be possible to reflect some of the usual communicative networks in which the Casualty doctor has to perform. In the notion 'communicative network' we bring together interlocutor, setting and channel variables, and can thus characterize the relevant background details of a communication act according to multivariate values. It seems reasonable to propose that certain networks will tax the learner's language performance more than certain others, and that it should therefore be possible to 'select' and 'grade' networks, as profitably from the pedagogical viewpoint as other reasoned choices in, say, code items.

As Slama-Cazacu (1972) points out, communication presupposes not only a choice of messages, but also a means of message 'distribution', that is, a choice of networks which include the emitters and receivers of the message during communication. A third choice is of signal systems to transmit the messages over the networks. The co-choice of signal system, network and also, to some extent, message, is determined primarily by the conditions under which work is performed, by the specific circumstances, and by the immediate environment. Of particular importance for the ESP course writer is Slama-Cazacu's finding of a reciprocal relation between the work process and the language process, and the 'evolutional change' in this relation engendered by unfolding circumstances.

The link between emitter and receiver may be more or less direct. The simplest direct network is that holding between two participants in face-to-face contact. The directness of a network decreases in proportion as signal systems (channels) introduce 'noise' and as the transmission is mediated through other participants. When the network involves three or more participants, the transmission may be of the 'linear' or 'exchange-routed' type. In linear networks, the messages are transmitted directly

from emitter to receiver; in the 'exchange-routed' type, by contrast, the messages are relayed (with possible increase in noise) through an emitter-receiver acting in an 'exchange' capacity. (A sub-type of the linear network which is common in certain work situations is the linear forward relay -- over which the message is retransmitted from initial emitter to eventual receiver.)

Leavitt's (1951) experiment with four network types found that task-efficiency and participant satisfaction varied between one network type and another. The experiment showed how the nature of the communication network determines which participant is to act as 'leader' (while the 'circle' network was leaderless, the 'chain' obliged the middle participant to be leader). Heise & Miller (1951) studied the performance of a three-participant group in five different networks with three signal-to-noise ratios and three kinds of tasks, and found that a 'closed chain' in which every participant emitted messages and received all the messages of both other participants was the most efficient. Such a network, in fact, is the most common in Casualty consultations with ambulatory patients (see Work in Progress: Report II, p. 8 ff.). Heise & Miller conclude that 'the performance of a small group depends upon the channels of communication open to its members, the tasks the group must handle, and the stress under which they must work.'

In the Casualty setting, it was found that the Casualty doctor, rather than the nurse or the patient, invariably acted as 'leader' in the two- or three-participant network. (When the patient, very rarely, made some bid for leadership, the doctor was likely ^{to} counter it). When the network, while still involving only one patient-participant, extended over two or more doctors, the leadership position was determined by the established institutional hierarchy within the hospital.

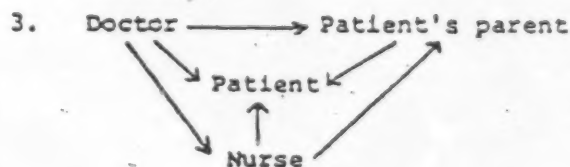
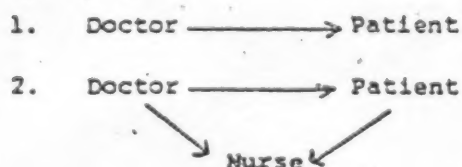
Bales, Strodtbeck, Mills & Roseborough (1951) concluded that features of the social relationship in a small group might be diagnosed from the tendencies of the participants in the group to approximate to, or deviate from, a 'normal' quantitative distribution of communicative acts. The finding was that if participants are ranked by the total number of acts they initiate, they will also tend to be ranked by

- (i) the number of acts they 'receive';
- (ii) the number of acts they address to specific other individuals;
- (iii) the number of acts they address to the group as a whole.

We suggest, then, that it may not be enough that the foreign doctor should rely on his institutional status to confirm him in his role as leader within the network. It seems possible that his communicative competence (cf. Hymes (1971), Candlin (1972)) will not be complete until he is able to fulfil the expectations of the native participants in the networks in terms of the norms for the quantitative distribution of communicative acts. Research would be needed to arrive at a quantified analysis of such norms, before any attempt can be made to teach them.

The more easily identifiable variables, however, will play a part in the account we take of communicative networks in the pilot materials. First, we would concentrate largely on the following networks (see Work in Progress : Report II, p. 19 f.)

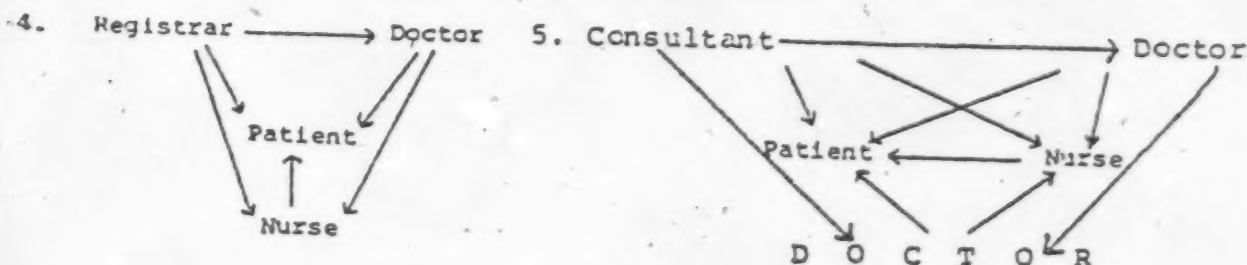
Fig. 7



These networks represent the most common patterns in Casualty consultations. In other less common networks involving senior doctors as participants there is less responsibility on the Casualty doctor himself to be leader in the communication, with the result that his communicative competence is less taxed. The smaller and simpler networks are also, of course, more manageable frameworks within which to concentrate on speech functions and language code. These three basic networks are all 'present' (see Work in Progress : Report II, p:17), and of limited, non-extendable size. In network 1 the patient's part can be played by the instructor. Networks 2 and 3, involving more than two participants, can be simulated with other learners filling the other parts. (In this way it may be possible in some measure to sensitize the doctor-learner to the impact of doctor behaviour on the other participants: it will need careful pointing out by the instructor to bring home to the learner the full effect that particular doctor behaviours have on a native patient.) The main aim in simulations with networks 1 - 3 will be to develop in the learner a proficiency in communication network leadership to parallel his task-oriented professional initiative.

Second, we would simulate some networks involving more than one doctor:

Fig. 8



Networks 4 and 5 represent more complex interactions which are medically more complicated. These interactions normally occur in a different setting (resuscitation room, recovery room or theatre; see Work in Progress: Report II,

4 (p. 16). This change brings with it, first, a shift in medical initiative and communication leadership; second, an increase in task-specific realia such as oxygen supply, surgical accoutrements, etc; third, a network extendability/contraction potential- fourth, a potential of greater spatial translocation of participants in the network. In these networks, which usually begin as a network 2 or 3, the patient (if conscious) may continue to regard the Casualty doctor himself as communication leader, even after the network has been extended to include the more senior clinician. The result may be that the network thus changes from a linear to an exchange-routed type, because the Casualty doctor receives the message from the patient and relays it to his superior. In this situation, the Casualty doctor does not combine the role of 'communication leader' with that of 'medical leader'. The implications of this can be brought out in learning materials.

The realia of the setting can be made use of in learning materials for checking/teaching/practising relevant lexical items and giving/getting/fetching/requesting formulae. These code features can be co-varied with differently routed transmissions over the network (thus making use of other skills such as speech reporting, etc.).

As pointed out above, these networks are normally extensions of simpler networks of type 2 or 3. The normal means by which they are extended is a telephone call from the Casualty doctor to a Registrar, anaesthetist, or other clinician. Making the call will necessitate the doctor's temporary absence from the network/interaction. The communicative skills of 'picking up the thread again' and re-establishing his leadership after this interruption

may need some practice. Communication on the telephone over a remote network can thus be naturally incorporated in the simulations.

Finally, there is in networks 4 and 5 a high potential of physical mobility among the participants (there is more space, and a greater range of medical tasks being performed). When some of the participants are grouped in closer proximity than the others, and when the network is in any case large, there is a tendency for temporary sub-networks to evolve. As participants' spatial orientations to one another change, different channels will be brought into play.

In the simulations, then, work can be done on the co-variation of proxemics, (cf. Hall (1964)) physical orientation and channel exploitation. (Cultural differences have been discovered in this area by Hall (1963)). It may be necessary for doctors working in this country to approximate to the socio-cultural norms if they are to be judged to be competent members of a 'team'.)

Particular demands are made on the doctor's linguistic competence in respect of transmediation and recoding skills. He has to be able to express the same propositional content in different language media (oral, written, etc.) and in different 'technical' and 'lay' codes. Aspects of these medium-conversion skills (cf. Bung (1973 b)) can be incorporated in the pilot materials with a controlled increase in complexity.

Transmediation skills are required of the doctor when, for instance, he receives a message aurally and must put its propositional content in writing. Many transmediations of this kind were observed during the field study. Thus in the Casualty consultation the doctor begins the ambulatory patient cycle (see Work in Progress : Report II p.10) with certain 'propositions' from the pre-notes, the handwritten form of which he has decoded. He may begin the interview with the patient (after a GREET function) by checking and/or enlarging upon one of these propositions orally/aurally with the patient. As new propositional content is transmitted through the patient's spoken replies, he will decode the incoming aural signal and convert it into written form in his clinical notes. This process continues through the interview, with the added complication that he may at times be handwriting while simultaneously speaking/listening.

Two points could be made here. First, proficiency in this transmediation and simultaneous multiple skill management may be one of the more critical signs of competence: the doctor who listens to a patient and then visibly switches his activity and writes in silence may be perceived by the patient as not fully in control. Second, the doctor has to manage a balance between showing his continuing attention during his writing and possible 'overload' resulting from excessive information processing demands. To maintain such a balance, he makes use of meta-communicative speech FUNCTIONS to regulate both the messages and the signals of the patient's transmissions.

The varying degrees of medical 'technicality' in the doctor's message must be encoded in the recording necessary in the consultation. The propositional content of the clinical notes which the doctor reads before beginning the interview is coded highly technically, and must be recoded in more lay terms that the patient will understand. Similarly, the patient's message has to be recoded into technical terms before it can be recorded in clinical notes. As was pointed out earlier, the nurse appears to occupy a medial position on this technical - lay cline, in her interactions with the doctor and the patient: while she exploits the lay code in conversation with the patient, the doctor will code his messages to her in terms that are more technical than the patient's lay code, but less so than the most technical doctor-doctor code.

In the learning materials, this co-variation of transmediation and recoding skills can be approached in several ways. In the early stages, there will probably be some need for intensive work on the 'common core', and this might best be undertaken while particular skills (speaking, reading, etc.) are practised in isolation. But work in the technical code could be undertaken without much delay, to capitalize on the learner's professional knowledge and motivation. Complexities of transmediation and recoding skills can then be progressively introduced -- perhaps with some parallel increase in propositional redundancy, the latter being controlled as a pedagogical variable to prevent cognitive processing overload on the part of the learner. The progression, co-varying skills and codes, might then be:

- Stage 1: Code constant, skill constant;
- Stage 2: Code constant, skill variable;
- Stage 3: Code variable, skill constant;
- Stage 4: Code variable, skill variable;
- Stage 5: Code constant, transmediation;
- Stage 6: Recoding, transmediation.

FURTHER RESEARCH

The main components of the Casualty doctor's communicative competence are now, we believe, specified. But further work is needed to discover which components (if any) are more central, higher in a priority ranking. Approaches to the empirical measurement, along a priority scale, of these components of communicative competence might be broadly of two kinds -- quantitative and attitudinal.

Quantitative analyses could be made of:

- a) the predictability of speech function realizations within and across 'complaint areas';
- b) transmediation and recoding frequencies according to task contexts;
- c) the relative distribution of cognitive language volume per task cycle.

Attitudinal assessments could be made by studying:

- a) patients' subjective evaluation after the consultation of doctor's
(i) competence; (ii) sympathy/understanding;
- b) doctor's evaluation after the consultation of the consultation as
a stretch of communication;
- c) the correlations, if any, between (a) and (b) above.

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